UNIVERSITY OF MEDICINE AND PHARMACY OF CRAIOVA
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PhD THESIS
- Abstract -

THE EVOLUTION OF HOSPITAL MORBIDITY BY MAJOR PSYCHIATRIC DISORDERS IN CORRELATION WITH PATIENTS' CHARACTERISTICS

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CONTENTS

Key words: major psychiatric disorders, epidemiology, statistics.

I. General part

Schizophrenia, psychosis, major depression and bipolar disorder are particularly serious psychiatric disorders, with significant negative impact on individual existence and potential major disabling. These sufferings are associated with high mortality and high costs, bringing severe damages to patients and their families. Only in the United States, the annual costs for schizophrenia were assessed by the American Psychiatric Association in 2001 to $ 30 billion [1].

Schizophrenia, due to young age onset, chronic evolution and severity of symptoms is a major public health problem. For partial understanding of this disorder in their biological dimensions, psychopathological and social research was needed to elucidate many determinism, early diagnosis and effective treatment setting. Depressive disorder was and remains a major challenge for practitioners and patients alike, both the prevalence, clinical features and therapeutic social impact and through personal suffering drastically limiting social and physical functioning [2, 3, 4, 5]. It is known that the effect on psychosocial functioning is positively correlated with the severity of the depression [4, 6, 7, 8] and the persistence of a low level of functionality is predictive for the recurrence of depression [6, 9, 10, 11].

The frequency of bipolar disorder is very different estimated, due to variability and polymorphism of its manifestations, and also to nosographic differences across different psychiatric schools. There is an opinion that bipolar disorder is more common in populations with high socio-cultural level and in southern Europe. According to European authors, the prevalence is estimated at 2.18% in urban areas and 2.34% in rural areas [17]. The average age of onset is usually located under 40 years [18]. Despite their high values, it is considered that this data are not authentic, but understated, given several reasons:

- Relevant and convergent studies estimated that only 25% of people with bipolar disorder require support from psychiatrists, while others require it from general practitioner or refuse medical treatment [25];
- Some research (especially American) were based on questionnaires, often applied by non-professionals, allowing inclusion among clinical entities transient mood disorders; on the contrary, in European countries, epidemiological studies have been conducted mainly through structured interviews based on objective diagnostic criteria evaluated, thus avoiding over- phenomena such data [24].

The last decades have seen significant therapeutic advances, resulting from convergent action psychopharmacological, psychotherapeutic methods and socio-therapeutic advances, that have changed the structure and in psychiatric hospitals and lead to the reintegration of many mentally ill peoplein society, by developing large ambulatory care.

Rapid development of epidemiological methods made it possible to find answers to questions referring to the provision of mental health services. In particular, the distribution of mental illness in the population has been clarified through epidemiological studies and, while clinical research has demonstrated the benefits of treatment, mental health services have gained increasing importance for both research and health policies. While studies in health services is conducted on a multidisciplinary field, epidemiology provides database to determine health needs in a population and its methods provide instruments in testing ways to improve the level of health.

We considered appropriate to investigate the evolution of specific indicators for schizophrenia, unipolar major depression and bipolar disorder in patients hospitalized in a psychiatric clinic.

II. Objectives and methods

1.1. Hypothesis
Systematic research of structure and evolution of hospital morbidity for major psychiatric pathology in relation to patient characteristics, data and assumptions could lead to new planning towards improving mental health services, with positive consequences on the evolution and costs.

1.2. Objectives
- Evolution of the weight and structure of admissions for major psychiatric disorders ina psychiatric hospital.
- Highlighting the relationships between patient characteristics and hospital morbidity in major psychiatric pathology.

1.3. Methods
Retrospective study of the evolution of admissions and patients with major psychiatric disorders.

Duration: 5 ani, 2005-2009.

Data source: clinical observation sheets in psychiatric wards of Neuropsychiatry Hospital Craiova. Admission, hospitalization indicators and characteristics of the patients were registered under the full protection of confidentiality of data identification. Admission and hospitalization items were entirely recorded for all mental disorders and separately for major psychiatric disorders. Characteristics were recorded for inpatients with major psychiatric disorders in the studied period. Also, we record the number of hospitalizations per patient.

The diagnosis was established according to ICD 10.

In the major psychiatric disorders (MPD) were included:
- schizophrenia, psychotic disorders - code F20-29 (SOP)
- unipolar major depression - code F32-33 (UMD)
- bipolar disorder - code F30-31 (BD).

Samples:
- Sample N = 5343 patients admited for major psychiatric disorders.
- Sub-samples:
  - N1= 1389 patients with schizophrenia and psychotic disorders (SOP)
  - N2 = 3655 patients with unipolar major depression (UMD)
  - N3 = 299 patients with bipolar disorder (BD).

Patients' characteristics were processed for the entire sample, for each sub-sample and compared.

1.4. Statistics
For data processing we used Microsoft Excel (Microsoft Corp., Redmond, WA, USA) with XLSTAT suite for MS Excel (AddinsoftSARL, Paris, France). Parameters measured for subjects in this study were stored in Microsoft Excel files (* .xls).

Processing data, calculation of statistical fundamental parameters and their graphic representation was made with Excel, Pivot Tables using the controls, Functions, Statistical, Chart and Data Analysis module. To achieve complex statistical tests (Chi square test, Fisher exact test, Student test and ANOVA), to give us an objective measurement, statistically, the differences noticed in the analysis weused XLSTAT module commands or were performed using SPSS.

III. Results

We retrospectively analyzed clinical observation sheets in psychiatric wards of Neuropsychiatry Hospital Craiova for a period of 5 years, in order to quantify the evolution of the share of major psychiatric disorders, in-psychiatric hospital morbidity and highlighting the relationship with the characteristics of the patients.

The total number of admissions has increased continuously, with an annual average of over 3.5% higher in the last two years.

In terms of total hospital days, there is an increase, with an annual average of 2.5%, partly consistent with the evolution of the number of admissions.

We find a mean duration of hospitalization consistently higher for women. Wilcoxon test for comparing two sets of values showed statistical significant differences between the gender mean duration of hospitalization ($p < 0.05$).

Concerning the total number of patients admitted, there was a continuous decrease after a peak in 2006, although the total number of hospitalizations and the number of days of hospitalization have been increased. As for the other parameters, the value for 2005 was the reference period.

Analyzing the gender distribution of the patients, we obtained a slight predominance of the male gender compared to that of the female gender in the period under study.

Regarding age groups, we found that nearly 2/3 of inpatient falls in the group 45-64 years, and nearly a quarter in the group 25-44 years.

In the distribution by gender and age group, there is a difference in favor of men in all age groups sharper under 25 years, without statistical significance.

Regarding marital status, it is worth noting that over 40% of patients are alone, without family support.

After professional status, active patients are only about a quarter of the total, while those unemployed more than a third.

By residence,urban patients predominated, which may be influenced by the higher availability at superior medical services and increased tolerance in rural areas.

Unipolar depressive disorder and schizophrenia group obviously surpassed bipolar disorder, the primary diagnosis in over two thirds of admissions for MPD.

The 2534 admissions for schizophrenia and other psychosis shows a variable distribution with a peak in 2007 and a minimum in 2009 relative to 2005 benchmark.

Difference in favor of women followed the gender structure in Dolj County (from where belonged 90% of patients) and is highly statistically significant ($p < 0.001$).

The analysis of hospitalized patients with UMD shows that there is a downward trend in admissions for UMD during the period 2005 - 2007, followed by a sharp upward trend in 2007-2009.

In patients with major psychiatric disorders, unipolar depressive disorder covers over 2/3, at the opposite pole being situated bipolar disorder.

IV. Discussions

Over the past decades, there have been ambitious efforts based on population studies in order to establish biomarkers in psychiatry and epidemiological criteria. There were established best epidemiological methods for modern psychiatry, such as the use of reliable nonclinical tools, proper management of diagnostic, assessment tools for diagnosis [2,3] but also how to compare clinical and non-clinical questionnaires to assess the validity of diagnostic [4,5,6]. As a result of several studies,it was established that the prevalence of psychiatric disorders in the general population is 38.2% [141], which could place these sufferings on the specialized national and international agenda [7].

For this study we quantified the evolution of the share of admissions in the psychiatric hospital within psychiatric morbidity and we highlighted their relationship with patient characteristics.

Overall, in the range studied, the number of hospitalized patients experienced a slight increase in the first year, following a trend of steadily decrease, more pronounced in 2008. In contrast, the number of admissions has experienced sustained growth from year to year, higher in 2007. Correlating the two indicators, we can conclude that we are dealing with an increasing number of relapses, which translates to an unfavorable outcome. This is somehow predictable given that it is a ward for acute patients, with a high severity of disease, generally directly linked to a number of individual factors, of which the most involved seems outpatient treatment compliance maintenance, condition relatively difficult to obtain without an adequate family support. Graph days of hospitalization has a similar pattern to that of the number of hospitalizations, observing, however, in the last year of the interval, a slight decrease, possibly linked to the introduction into practice of therapeutic protocols and access to cutting-edge therapies.

Regarding the gender distribution, chart overlaps largely over global group structure, both for men and for women. A different aspect note, however, the days of hospitalization in men, which in 2005 at a lower value. We conclude that, this year, male patients had a better outcome during hospitalization.

Evolution of the number of admissions for major psychiatric disorders (MPD) overlaps largely over the number of hospitalizations; general trend is slightly increasing from year to year. Comparing hospitalization days, the difference is obvious in 2006 when we observed a decrease of the number of days of hospitalization for MPD, while indicator for general sample experienced a relatively sharp descent.

Regarding the number of patients, it varies greatly for general admissions, with a significant growth in 2005-2006, then two years of steady decline (higher in 2006) and linear trend in 2008-2009. Evolution of the number of patients with MPD looks similar, except that in 2007-2008, when we noticed a steeper decline in the number of patients with other conditions than MPD.

Patient distribution with TPM by gender showed a different structure of the global sample, thus the gender difference is highly significant for women in patients with MPD (p <0.001), while in the overall group, the gender distribution shows a slight superiority of males, statistically insignificant.

By age groups, we see that the differences between the number of patients in global sample and MPD could increase with ageing, the biggest difference being observed at ages over 65, probably correlated with increased involution period-specific conditions (eg, . dementias) and "out of circuit" by taking the services of MPD chronic cases with long evolution. Chi square test revealed a highly significant difference in the distribution by age among all hospitalized psychiatric patients and patients with MPD in the study period (p <0.001).

Evolution of the whole lot admissions shows a slight ascendancy over the study period, most pregnant in 2007. A similar trend has virtually admissions for UMD. In contrast, the number of admissions for SOP has a different evolution, namely linear in the early years of the interval and decreasing during the last year of study. Number of admissions for BD has the most linear evolution

with no significant changes over the years. Evolution of hospitalization days overlaps practically over admissions curve for each diagnostic group.

The appearance of dynamic evolution of admissions for UMD is closest to the evolution of admissions for MPD generally, noting the growing trend in the last 2 years of the interval. Curves admissions for SOP and BDdo not vary widely in the study period, the number of admissions is nearly constant.

Significant differences are observed in the hospitalization days. Thus, for MPD in general, there is a slight but continuous decrease of days of hospitalization in the first 2 years and a significant increase in 2007 and 2008. The decrease in hospitalization days for UMD shows a linear trend in 2005-2007, increasing continuously and significantly in 2007-2009. Days of hospitalization for SOP have a linear trend in the early years and a sharp drop in 2008, while hospitalization days for BD does not change practically during the study interval.

Similarly, the graphics of the number of patients for MPD in general vs. separate clinical entities is much different. For MPD, after a slight increase in 2005, follows a continuous decrease of the indicator, more pronounced in 2006. The appearance is similar to the first UMD 2 years (less pronounced in 2006), and after a significant growth. Evolution of the number of patients for BD is linear. For SOP, following a linear trend in the first 3 years, we note a slight but continuously decline in recent years range.

There is a highly significant difference (p <0.001) in patients gender division between nosological entities studied. The gender distribution of patients with UMD is closest to that of patients with MPD, with a much higher share of women. For SOP, the share of men over women is 47% vs. 53%, while for the other disease groups the proportion of men is approx. 40%. Although there is a slight predominance of the number of male patients in the global group, in present study can be seen predominantly female representation for all nosological entities analyzed.

As speculated in articles, certain geographical areas have an increased sensitivity of feminine psychiatric problems, not because of resistance from those regions distinguished men, but because they tend to suppress disease using alcohol, physical aggression etc. [10].

Distribution by age reconfirms that SOP characterizes young ages (under 45), while subsequently UMD becomes predominant pathology, clinical data being consistent with the onset of major depression after the age of 30 years, linked to a number of individual and socio-economic vulnerability factors that occur after this age (biological decline, somatic comorbidities, unemployment etc.). Overall, we can say that after 65 years, the number of patients with MPD decreases drastically by "deleting" symptoms or takeover by chronic psychiatric wards. The vast majority of patients with UMD is the segment 45-64 years. Statistically, it is highly significant that there is a difference between the 3 types of problems in the distribution of patients by age (p <0.001). This difference is due to the percentage of over 50% of the SOP for the group 25-44 years and more than 80% of the UMD for the group 45-64 years old.

For patients with SOP we note that 44% are married (71% to 66% for UMD and BD), 17.7% are single (~ 3% and 6% UMD/BD) and 38% are divorced (26% and 27% UMD/BD), which is explained by the onset at a young age (Chi square p <0.01).

Share of married patients with UMD is lower compared to the general population, taking into account the age groups analyzed. We noted the significant number of divorcees and widows,the disease burden leading to partners'separation. Even more significant is the share of divorcees and widows among those with SOP (38%), approaching that of married persons (44%). Indeed, psychoses, especially schizophrenia, by posting reality and emotional coldness, is put to the test conditions which life couple, living together becomes impossible, especially in terms of recurrence and severe forms, where noisy, violent acts occur, noisy, precipitatingseparation. It is noteworthy, however, for all nosological groups, the small number of single patients.

In all MPD, strongly dominate retired / unemployed, which is explained by the high degree of socio-professional disinsertion induced by their severity. There is a neglected number of people unemployed, predominantly in SOP category. Here we note the small percentage of employed or employed in education (ie students), in close correlation with earlier onset of symptoms in

comparison to other categories. A higher quality of social and professional insertion seem to have UMD patients, even if retired / unemployed prevail. Keeping the proportions, the distribution by employment status is similar in patients with BP, here seen in the vicinity of the number of retired and unemployed persons.

The significant difference between the three groups in terms of their professional status ($p < 0.01$) is given by the percentage of over 60% of patients with SOP and no occupation, as compared to the other nosological groups, which registers a percentage of about 30%.

The practical value of an epidemiological study properly and well conducted is undeniable for understanding the evolution of psychiatric disorders in a population, which may serve as a theoretical basis for improving the diagnostic process and supply of psychiatric services.

Schizophrenia, psychosis, major depression and bipolar disorder are particularly serious psychiatric disorders, with significant negative impact on individual existence and potential major disabling. These sufferings are associated with high mortality and high social and economic costs, bringing severe damages to patients and their families. Only in the United States, the annual cost of schizophrenia, for example, were evaluated by the American Psychiatric Association in 2001 to $ 30 billion [1].

These disorders play an important role in psychiatric morbidity, their prevalence is growing, influenced by the population agglomeration emphasis, social disruptive elements, but also the development of healthcare, thus requires extensive studies identifying these problems with socio-economic repercussions, consequences of modern society.

Thus, we considered trying to investigate how schizophrenia, unipolar major depression and bipolar disorder develops in patients hospitalized in the psychiatric clinic, using a number of statistical parameters, thus avoiding non-scientific, subjective elements characteristic to epidemiological studies based on non-professionals.

The results of this study underlines the importance of regional population analysis, able to respond to growing international issues, but that acts slightly differently depending on the local characteristics of the populations concerned. In this sense, we can be improve international protocols for diagnosis and treatment of psychiatric pathologies, with the certainty of their application for a proper diagnosis of regional / cultural variations of these types of pathologies.

IV. Conclusions

1. The total number of admissions and hospitalization days increased by 14.9% respectively 10.1%, but the total number of hospitalized patients decreased by 15.3%, a situation that could be related to a less favorable evolution of hospitalized patients.

2. The total number of hospitalizations was significantly associated with male - 51.5% and the age group 45-64 years - 64.7%.

3. Only 25.3% of inpatients had a stable job (employee, education) and patients in urban areas significantly prevailed - 56.5%.

4. Share of admissions and days of hospitalization for major psychiatric disorders decreased during the study period (2.3%, 3.7%), as well as the number of patients (2.2%).

5. Average length of stay was 16.1 days for all admissions and 17.4 days for major psychiatric disorders, with almost constant annual values.

6. Share of patients with major psychiatric disorders from all admissions was 16.2% for schizophrenia and other psychoses, 42.5% for unipolar depressive disorder and 3.5% for bipolar disorder.

7. In patients with higher number of hospitalizations (at least one hospitalization per year) it was a significant predominance of women for all major psychiatric entities: schizophrenia, other psychoses - 68.0%, unipolar depressive disorder - 59.3%, disorder bipolar affective - 76.2%. This finding could translate a less favorable development of such suffering in women.

8. Relation between number of hospitalizations and the number of days of hospitalization with hospitalized patients was divergent:
    • Schizophrenia, other psychoses - decrease in the number of admissions - 3.3%, the number of hospitalization days - 25.9% and the number of patients - 46.3%.
    • Unipolar depressive disorder - increase in admissions - 17.5% and 19.2% number of hospitalization days, with fewer patients - 4.4%;
    • bipolar disorder - decrease in the number of admissions - 29.9%, the number of hospitalization days - 33.7% and the number of patients - 58.6%.

9. In urban patients there was a significant predominance of women for major nosological entities: 59.4% for schizophrenia and other psychoses, 66.8% for major depressive disorder and 64.0% for bipolar disorder.

10. The average length of hospitalization was 19.1 days for bipolar disorder, 18.3 days for schizophrenia and other psychoses and 17 days for unipolar depressive disorder.

11. Admissions for major psychiatric disorders were significantly associated with female gender - 68.4%, age 45-64 years - 68.1%, urban - 60.3%, and the precarious professional status - 73 1% retired or unemployed.

12. Admissions for schizophrenia and other psychoses were significantly associated with age group 25-44 years - 53.8%, no family - 55.9% (17.7% and 38.2% divorced singles, widowed) and with precarious professional status - 90.9% retired or unemployed.

13. Inpatient unipolar depressive disorder were significantly associated with female gender - 61.4%, age 45-64 years, urban - 64.6%, precarious professional status - 66.3%, retired or unemployed .

14. Admissions for bipolar disorder were significantly associated with females - 58.9%, age group 45-64 years - 55.9%, urban - 54.9%, precarious professional status - 63.6% retired or unemployed.

15. For all major psychiatric disorders,there has been an increase in the number of admissions by 8.2% and the number of hospitalization days by 1.0%, while a decrease of 20.3% for the number of patients. This disproportion between the development of indicators of hospitalization and evolution of the number of patients requires further research to establish a comprehensive strategy to improve hospital psychiatric morbidity evolution.

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