SCHIZOPHRENIA
SOCIAL PERSPECTIVE. SITUATION IN POLAND
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Schizophrenia is a mental disorder which can be defined as a clinical presentation or set of symptoms that usually exist together, but it is extremely difficult to formulate a clear and straightforward definition of it.

Positive symptoms, such as delusions, thought disorder and hallucinations co-exist in differing proportions with negative symptoms, which include reduced volition (will-dependent action focused on goal-oriented activities) and emotionality, including autism, eventually reflected in reduced level of individual and social functioning. These include dysfunctional communication, reduced emotional expression, loss of interest in social interaction, reduction or inability to experience pleasure, loss of motivation, anhedonia, apathy, and in extreme cases complete lack of volition, known in psychopathology as avolition. Negative symptoms more than positive symptoms are more responsible for reduced functioning. A number of publications, as well as clinical observations point to a correlation between the increase in negative symptoms and their detrimental impact on the patients’ occupational and social functioning, as well as their ability to live independently. These limitations are partially due to reduced initiative and motivation disorders, and partially due to the chronic nature of the disease process and its mostly progressive character.

Further difficulty in providing an unambiguous definition of the disease lies in the fact that these groups of symptoms present in differing degrees of severity and – importantly from a clinical point of view – also in differing proportions. In some cases, positive symptoms come to the forefront, but it is often the case (especially among patients with a longer history of the illness) that severely debilitating negative symptoms are dominant.

Therapeutic interventions should therefore be aimed at influencing both dimensions of the disorder, comprising different elements of its clinical presentation. Acute and relatively quickly apparent positive symptoms can be quite effectively extinguished with antipsychotic medication. Polish practice at this stage of the treatment process includes the use of first- and second-generation antipsychotics, available in different formulations – tablets, capsules, oral dispersible tablets, fast-acting intramuscular injections and depots. Clinical experience shows that in terms of improving the mental condition – it is more difficult to achieve good results against negative symptoms. Improvement in executive functions after an acute psychotic episode is slower and patients often fail to return to pre-exacerbation levels. Epidemiological data and clinical experience suggest that reducing the risk of relapse is an worthwhile objective aside from suppressing acute psychotic symptoms.

Diagnostics

To facilitate correct diagnostics, doctors throughout the world apply disease classifications – standardized criteria that enable them to post or rule out a diagnosis. European countries generally use the International Classification of Diseases 10, while the U.S. uses the fourth amended edition of the Diagnostic and Statistical Manual of Mental Disorders. Both classifications complement each other, and small differences reflect the different approach to clinical concepts in psychiatry. Thanks to the progress of scien-
Schizophrenia - definition, dimensions and their consequences

Specific research into the pathogenetic issues of mental diseases, these classifications are in a sense dynamic – subject to updates like the recently (May 2013) presented and implemented DSM-V. Aside from their statistical value, the guidelines contained in these classifications enable the formulation of clinical conclusions and the planning of appropriate treatment, including necessary rehabilitative interventions. This approach is particularly important in psychiatry, because mental disorders are some of the most chronic and debilitating diseases affecting the population, as proven - among other sources - in subsequent replications of the Global Burden of Diseases study.

Types of schizophrenia

<table>
<thead>
<tr>
<th>ICD-10</th>
<th>DSM-IV-TR</th>
</tr>
</thead>
<tbody>
<tr>
<td>F 20.0 Paranoid schizophrenia</td>
<td>295.30 Paranoid type</td>
</tr>
<tr>
<td>F 20.1 Hebephrenic schizophrenia</td>
<td>295.10 Disorganized type</td>
</tr>
<tr>
<td>F 20.2 Catatonic schizophrenia</td>
<td>295.20 Catatonic type</td>
</tr>
<tr>
<td>F 20.3 Undifferentiated schizophrenia</td>
<td>295.30 Undifferentiated type</td>
</tr>
<tr>
<td>F 20.5 Residual schizophrenia</td>
<td>295.60 Residual type</td>
</tr>
<tr>
<td>F 20.6 Simple schizophrenia</td>
<td></td>
</tr>
<tr>
<td>F 20.8 Other schizophrenia</td>
<td></td>
</tr>
</tbody>
</table>


Diagnostic criteria for schizophrenia

ICD-10

G1. Either at least one of the syndromes, symptoms and signs listed below under (1), or at least two of the symptoms and signs listed under (2), should be present for most of the time during an episode of psychotic illness lasting for at least one month (or at some time during most of the days)

1. a. Thought echo, thought insertion or withdrawal, or thought broadcasting,
   b. Delusions of control, influence or passivity
   c. Hallucinatory voices giving a running commentary on the patient’s behaviour, or discussing him between themselves, or other types of hallucinatory voices coming from some part of the body
   d. Persistent delusions of other kinds that are culturally inappropriate
   e. Persistent hallucinations in any modality, when occurring every day for at least one month, when accompanied by delusions
   f. Neologisms, breaks or interpolations in the train of thought, resulting in incoherence
   g. Catatonic behaviour
   h. Negative symptoms

G2.

1. Exclusion of manic and/or depressive episode,
2. The disorder is not attributable to organic brain disease (in the sense of F0), or to alcohol- or drug-related
3. Intoxication, dependence or withdrawal

DSM-IV-TR

A. Characteristic symptoms: Two (or more) of the following, each present for a significant portion of time during a 1-month period (or less if successfully treated):

1. Delusions
2. Hallucinations
3. Disorganized speech
4. Grossly disorganized or catatonic behaviour
5. Negative symptoms

B. Social/occupational dysfunction

C. Duration: Continuous signs of the disturbance persist for at least 6 months. This 6-month period must include at least 1 month of symptoms (or less if successfully treated) that meet Criterion A (i.e., active-phase symptoms) and may include periods of prodromal (symptomatic of the onset) or residual symptom

D. Schizoaffective and Mood Disorder exclusion

E. Substance/general medical condition exclusion

F. Relationship to a Pervasive Developmental Disorder (delusions or hallucinations present for at least a month)

Treating schizophrenia requires a multidimensional approach – both strictly medical and rehabilitative.

Patients can contact their psychiatrist in an outpatient mode, without prior referral from a primary healthcare doctor. There are currently 1135 mental health clinics, which in 2012 conducted a total of 14,498 ‘first-time’ consultations which concluded in a schizophrenia diagnosis.

In emergency situations it is possible to access psychiatric consultations in an admission room of a psychiatric or general hospital with a psychiatric ward. According to the IPN Statistical Yearbook, in 2010 there were 53 full-time psychiatric hospitals in Poland. Hospitalizations can also be effected in a day-care system. Services provided by these types of wards in Poland are usually rehabilitative in character. They are designed for patients who have achieved remission in outpatient or inpatient treatment, but still require intensive treatment interventions.

Available data points to the significant impact of social- and psychotherapeutic interventions such as: social skills training, cognitive-behavioural therapy, cognitive and social-cognitive improvement training on clinical outcomes. Combination therapy is associated with improved compliance – less drug switching and/or fewer treatment discontinuations, reduced risk of relapse, improved introspection into the mental disorder (“awareness of being ill”) and – importantly – improved quality of life and better social functioning.

Poland’s current psychiatric treatment model is moving from care based on large, independent psychiatric hospitals to community-based psychiatric models.

Psychopharmacotherapy

Psychopharmacology now enables a broad scope of influence on a dysfunctional central nervous system. Available means include drugs used since the middle of the previous century with proven efficacy and well understood scope of potential adverse effects. Their mechanism of action has been proven and works by blocking dopamine receptors – mainly of the D2 class. Reducing the access of dopamine to its receptors is responsible for the antipsychotic action which reduces symptoms such as delusions and hallucinations. The strength of antidopaminergic action has become the criterion by which these drugs are classified as first generation antipsychotic drugs (LPIG). These drugs...
Second generation antipsychotics are now most often used in the pharmacological treatment of schizophrenia. Unlike classic (LPIG) drugs, their antidopaminergic action is weaker, and their main mechanism of action is based on blocking serotonin signalling – primarily mediated by subclass 2A 5HT receptors. Despite differences in various representatives of this group of medicines, it can be said that they are free from the consequences of excessively strong blocking of the dopaminergic system (i.e. iatrogenic Parkinsonism) which negatively affects patient-doctor cooperation and reduces compliance, increasing the risk of relapse. Atypical drugs are usually better tolerated by patients, but even they bring delayed adverse effects. It is worth noting that injectable formulations of LPIG are becoming more frequently used, mainly in non-compliant patients and/or patients with poor tolerance of first generation antipsychotics.

Technological progress in drugs and widespread treatment access has resulted in efforts to systematize current psychopharmacological knowledge.

Polish treatment protocols and recommendations include guidelines for schizophrenia treatment. They cover first and subsequent episodes, maintenance treatment, drug switching and other detailed clinical situations. These compilations are continuously updated based on new scientific findings and clinical practice data.

### Facilities

<table>
<thead>
<tr>
<th></th>
<th>1990 r.</th>
<th>1995 r.</th>
<th>2000 r.</th>
<th>2005 r.</th>
<th>2007 r.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Community care facilities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>number of units</td>
<td>12</td>
<td>16</td>
<td>17</td>
<td>29</td>
<td>35</td>
</tr>
<tr>
<td>number of patients</td>
<td>1206</td>
<td>1941</td>
<td>1833</td>
<td>3988</td>
<td>5192</td>
</tr>
<tr>
<td><strong>Day wards</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>number of facilities</td>
<td>76</td>
<td>99</td>
<td>132</td>
<td>203</td>
<td>240</td>
</tr>
<tr>
<td>number of places</td>
<td>1948</td>
<td>2160</td>
<td>2823</td>
<td>4290</td>
<td>5257</td>
</tr>
<tr>
<td><strong>Hostels</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>number of facilities</td>
<td>7</td>
<td>9</td>
<td>7</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>daily average (patients)</td>
<td>61</td>
<td>77</td>
<td>45</td>
<td>152</td>
<td>210</td>
</tr>
</tbody>
</table>

Non-hospital community psychiatric care facilities in 1990 – 2007 (National Health Program)

### Available drugs

**First-generation antipsychotics** whose mechanism of action is based on blocking dopamine receptors, primarily of the D2 subclass.

**Second-generation antipsychotics** work by blocking serotonin signalling, mediated primarily by subclass 2A 5HT receptors.
Prognosis

Observational studies in schizophrenia have shown that long-term remission of symptoms was achieved in 33% of patients, long-term high quality of life in 27%, and 13% of patients experienced long-term remission in general functioning. Medium- and long-term cohort observations have shown that around 20% experienced complete recovery, a total of 40% have regained a good level of social functioning and 16% of patients recovered in a later phase of treatment.

Cooperating with the patient - compliance

Failure to comply with doctors’ recommendations is widespread – regardless of the medical area in question, it is believed that 50% of patients fail to take their medications as prescribed. In psychiatry, this has serious consequences – both in terms of the natural process of mental disorders and in economic terms. Effective pharmacotherapy reduces the frequency of long-term, costly hospitalizations while reducing the risk of stigmatization and social exclusion. It has been shown that discontinuing antipsychotic treatment increases the probability of exacerbation of psychosis 3.5-fold. For patients diagnosed with schizophrenia, the incidence of non-compliance is greater than in patients treated for somatic illnesses – the problem is widespread at 20-90%.

A study of patients in their first psychotic episode showed that half of them were not sufficiently compliant or failed to comply within a year of starting treatment. Leucht showed that within 10 days of hospital discharge, fewer than 25% of schizophrenia patients complied only partially, or did not comply at all, and this percentage grew to 50% within one year and 75% within two years of hospitalization. Non-compliance is also related to the type of institution providing care. Non-compliance is less frequent in hospital patients, and more frequent (up to 90%) in community therapy with limited medical supervision. Available data points to the scale of the problem of limited compliance which remains a challenge to the medical community.

National Program

Based on a number of legislations and initiatives of the European Union, as well as World Health Organization guidelines, on 28 December 2010, the Prime Minister issued a regulation establishing the National Mental Health Program. This document outlined the directions of action, schedule, scope of responsibilities and budget in order to “bring access to psychiatric care closer” to where patients and their families live. Based on the Program, local initiatives (similar to those in the majority of advanced countries) are developing a network of community support. This model has yet another very important task in the social context – the ‘de-stigmatization’ of patients burdened by the schizophrenia experience.

National Health Program passed on 28 December 2010

This document outlines the directions of action, schedule, scope of responsibilities and budget to “bring access to psychiatric care closer” to where patients and their families live.
Our understanding of the epidemiology of schizophrenia has become much deeper over the last thirty years. During this time, diagnostic criteria have become more precise and attention has been turned to genetic factors and interactions of the genotype with environmental factors. The relatively stable incidence of schizophrenia, estimated at around 15 cases per 100,000 persons per year, supports the hypothesis of the genetic aetiology of the disease. However, a number of studies conducted in recent years confirm the influence of various factors on discrepancies in the incidence of psychoses; these factors include: urban or rural environment, resource levels and integration in local communities, and—probably of biggest importance—the percentage of immigrants in the studied population. Results of the ČSOP epidemiological study have shown that the incidence of all psychotic disorders is around 30/100,000 person-years. The decisive majority were non-affective psychoses which matched the definition of schizophrenia. Unlike the generally accepted proportion of incidence among men and women of 1.4:1.0, the authors estimated the disorder in question to be twice as likely in men.

The incidence rate is estimated at 4.6/1000 (point-based), 3.3/1000 (periodically) and 4.0/1000 (lifetime). Poland is yet to conduct an epidemiological study of schizophrenia. Data from statistical card registries in psychiatric care is published in the IPN Healthcare Organization Office Statistical Yearbooks in Warsaw. Individual psychotic disorder diagnosis rates per 100,000 inhabitants in the 1997-2009 period derived from this data are presented in Table 1.
The total rates of hospitalizations for schizophrenia (F20 according to ICD-10) and other psychotic disorders (F21-29 according to ICD-10) in 1997 were, respectively 82.5/100 000 and 27.5/100 000. This rate peaked for F20 (89.9/100 000) and bottomed for F21-29 (26.1/100 000) in 2009. 2007-2009 saw the strongest expression of the growth trend in stationary hospitalization rates for schizophrenia and the strongest decline in diagnoses of other F21-29 psychotic disorders (Illus. 1).

As far as first-time treatment in ambulatory care for F20-F29 is concerned, more dynamic changes were observed with a strong upward trend in the F20 schizophrenia rate (Illus. 3).

This phenomenon has been analyzed as part of the assessment of the impact of Polish reimbursement policy on the psychotic disorder incidence index in the population. A clear association has been shown between the overdiagnosis of schizophrenia and limitations in access to reimbursable 2nd generation drugs for patients with non-schizophrenia psychotic disorders.

<table>
<thead>
<tr>
<th>Year</th>
<th>Hospitalizations</th>
<th>Ambulatory care</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total F20</td>
<td>First Time F20</td>
</tr>
<tr>
<td>2009</td>
<td>89.9</td>
<td>26.1</td>
</tr>
<tr>
<td>2008</td>
<td>86.6</td>
<td>28.4</td>
</tr>
<tr>
<td>2007</td>
<td>78.7</td>
<td>34.3</td>
</tr>
<tr>
<td>2006</td>
<td>80.8</td>
<td>35.7</td>
</tr>
<tr>
<td>2005</td>
<td>80.8</td>
<td>35.3</td>
</tr>
<tr>
<td>2004</td>
<td>81.6</td>
<td>34.8</td>
</tr>
<tr>
<td>2003</td>
<td>82.6</td>
<td>35</td>
</tr>
<tr>
<td>2002</td>
<td>83.2</td>
<td>34.9</td>
</tr>
<tr>
<td>2001</td>
<td>78.7</td>
<td>32.1</td>
</tr>
<tr>
<td>2000</td>
<td>80.8</td>
<td>31.3</td>
</tr>
<tr>
<td>1999</td>
<td>80.2</td>
<td>28.9</td>
</tr>
<tr>
<td>1997</td>
<td>82.5</td>
<td>27.7</td>
</tr>
</tbody>
</table>

Psychotic disorder hospitalization and ambulatory care rates in Poland (F20-29), 1997-2009.
Co-morbidities are an important issue from the perspective of evaluating the costs of mental disorders. Schizophrenia – considered an indicator disease for the purpose of this paper – often co-exists with somatic diseases or other mental disorders. Psychiatric patients more often than the general population suffer from respiratory diseases - Chronic Obstructive Pulmonary Disease (COPD), hypothyroidism and HCV. Results of Brown’s study have shown that Standard Mortality Rates in schizophrenia patients are higher than in all causes of death analyzed by researchers, which included: cardiovascular diseases (SMR 2.58), respiratory diseases (SMR 4.99), cancers (SMR 1.49), digestive system diseases (SMR 2.89). Results of the quoted mortality study confirm cancer incidence estimates, whereby neoplastic processes of the throat, lung, large bowel and breast are more frequent in persons with diagnosed schizophrenia. Crump has shown that men with schizophrenia died 15 and women 12 years earlier than representatives of the general population. Main causes of death included: ischemic heart disease and cancer. Schizophrenia patients were less likely than healthy persons to be diagnosed early with ischemic heart disease (26.3% vs. 43.7%) and cancer (73.9% vs. 82.3%) which represents a challenge to public health specialists. Around half of patients suffering from this psychosis are addicted to alcohol, nicotine or cannabinoids, with all the consequences – including somatic – of using psychoactive substances. The frequency of nicotine addiction is three times higher in schizophrenia patients than in the general population, 88% and 25-30% respectively. The problem of withdrawal treatment of psychiatric patients is a serious challenge not only to addiction therapists but also to the entire healthcare system, primarily due to frequent relapses of the indicator disease, poor compliance and limited availability of facilities specializing in patients burdened by this so-called “double diagnosis”.

Much data points to the co-existence of schizophrenia and diabetes and metabolic syndrome. It is estimated that around 15% of patients with this psychosis have diabetes compared to 6% in the general population. The prevalence of diabetes in the families of psychiatric patients is also higher than the expected population average, which according to authors may point to a common pathomechanism. However, research in this area has been inconclusive. Obesity is widespread among schizophrenia patients. It has been shown that patients are 1.5 to 4.0 times more likely to be obese compared to the general population, which constitutes yet another metabolic syndrome risk factor. Obesity is conducive to the development of diabetes and constitutes a component of the metabolic syndrome, increasing the risk of cancer – primary liver cancer, colon and pancreas cancer, as well as breast and endometrium cancer in women, and liver cancer and bladder cancer in men. The synergic pathogenic co-existence of several different disease risk factors is particularly important in psychiatric patients.
The above mentioned late diagnostic of somatic diseases, poor compliance and limited social functioning necessarily classify patients as a population at risk of higher morbidity. It seems necessary to implement solutions to counteract this phenomenon – both on the healthcare system level and in daily practice, by working to achieve better compliance and maintaining remission.

In more than 2/3 of schizophrenia patients, the cause of death is ischemic heart disease, compared to around 50% in the general population\textsuperscript{35}. Important risk factors, many of which are interconnected, include: smoking, poor dietary habits, low physical activity, obesity, relative poverty and inadequate quality of healthcare\textsuperscript{36,37}.

An analysis of 11-year Finnish registers has shown that mortality rates of schizophrenia patients who take antipsychotic medication are lower than those of persons not on treatment\textsuperscript{38}.

Various data figures show that the risk of death in persons with diagnosed schizophrenia is 2-3 times higher than in the general population, and 2/3 of deaths are due to natural reasons\textsuperscript{34}. Causes of increased risk include higher suicide rate and the above mentioned risk of somatic co-morbidities\textsuperscript{34, 42, 51-54}.

Co-morbidities are one important aspect in estimating the costs associated with mental disorders. Schizophrenia – which for the purpose of this paper is considered an index disease – often co-exists with somatic illnesses.
Schizophrenia related cost

Apart from the direct burden of disease experienced by patients with schizophrenia and their close friends and relatives, the disorder also creates significant financial cost to the economy as a whole. Its largest component are indirect costs which can be mitigated by, among other ways, appropriate medical care.

The analysis of the costs of schizophrenia and other diseases differentiates between direct and indirect costs. Direct costs include all expenses involved in the use of resources required to provide medical care, such as costs of hospitalization and ambulatory care, costs of drugs and others. A full analysis should also include indirect costs which affect the economy more broadly and are often difficult to define precisely. One example can be the permanent or temporary inability to work due to disease, which reduces productivity and increases the disease-related burden to the economy.

In 2010 Poland spent 7% of GDP (PLN 99 billion) on healthcare. Central Statistical Office – National Healthcare Spending 2010. It is estimated that psychiatric healthcare makes up 3.5% of this amount.

In 2011, Poland spent 6.9% of its Gross Domestic Product (PLN 104 billion, including public and private funding) on healthcare, which is much less than the OECD average, and less than in Hungary, the Czech Republic or Slovakia. Nearly 30% of this amount were private expenses. These figures do not specify the funding allocated to psychiatric healthcare. However, it is estimated that in Poland these expenses constitute 3.2% of public healthcare spending. In relation to direct costs of treating just schizophrenia, depending on the methodology of the study, the period of time in question and the given country's healthcare system, these costs amounted to between 1.9% of total healthcare spending in Belgium, through 2.5% in the U.S., to 2.8% in Great Britain.

However, compared to other mental disorders, the costs connected to schizophrenia borne by the healthcare system are high due to long-term hospitalizations, which in Poland in 2011 amounted to 36.9 days and frequent re-hospitalizations. It is worth emphasizing that during the 8-year period of 2003-2011 the length of hospitalizations had shortened by just one day (from 37.9 to 36.9 days), whereas the hospitalization rate grew from 4501/10 000 to 4887/10 000 mainly due to schizophrenia. A large number of chronically sick patients, often suffering co-morbidities, constitutes a serious burden to the healthcare system mainly because of the high rate of unemployment and pension benefits, and social security support. People with schizophrenia face more difficulty accessing jobs, partially due to the disease process, and partially due to the stigmatizing diagnosis of mental illness. This pertains not only to the competitive job market, but also to jobs in supported employment enterprises. It is estimated
that in the EU, the most frequent cause of job loss (around 30%) are mental disorders, ahead of muscle and bone diseases (around 21%), cardiovascular diseases (around 11%) and cancer (around 10%). In 2010, mental disorders in Poland were the fourth reason (10.9%) of disability certification after cardiovascular disease (23.4%), cancer (23.2%), and muscle and bone disease (12.0%)\(^6\). In terms of the length of sick leave, out of all employed in 2010, psychiatric patients constituted the second (after cancer) group with absence duration longer than 16 days, compared to an average of 12 days\(^6\). In 2010, expenses on job disability social insurance benefits constituted pensions (52.0% of total expenditures). The second position were expenses due to sick absence (39%), followed by social pensions (5.4%) and rehabilitation benefits (3.2%)\(^6\). It should also be emphasized that in 2009, ranking among the largest sources of job disability-related expenses, schizophrenia generated 3.2% of all expenses and was the fourth disease-related cause of job disability, generating the highest expenditures on related benefits.

Schizophrenia-related job disability social security expenditures

In 2010, schizophrenia patients’ job disability-related social insurance benefits amounted to PLN 940 537 092.44. Sick absence benefits constituted only 2% of these expenses.

Schizophrenia-related pension expenditures in Poland

In 2010, schizophrenia-related job disability social security benefits amounted to over PLN 940 million. The main component were job disability pensions, which constituted 98% of the expenditures.

Schizophrenia-related job disability social security expenditures

\[
\begin{align*}
2009y: & \quad 907 148 \text{ mln zł} \\
2010y: & \quad 940 537 \text{ mln zł}
\end{align*}
\]

The presented specialist psychiatrist care figures have been made available to the authors by the SII

Schizophrenia can lead to “double” public expenditures: on one hand, poorly controlled schizophrenia means costly hospitalizations, creating a burden to the National Health Fund, and on the other hand burdens the public budget with disability benefit spending (ZUS).

In 2009, ZUS job disability spending on patients with schizophrenia was double the amount spent by NHF on schizophrenia treatment and care spending.

Focusing on maintaining social roles with appropriately early psychological-social-medical interventions, through activating and enhancing the independence of patients can reduce the number of hospitalizations and indirect costs burden.

Job disability certification in Poland in 2010 by cause\(^6\):

\[
\begin{align*}
10,9\% & \quad \text{mental disorders} \\
12\% & \quad \text{bone, joint and muscle diseases} \\
23,2\% & \quad \text{cancers} \\
23,4\% & \quad \text{cardiovascular diseases}
\end{align*}
\]

The presented specialist psychiatrist care figures have been made available to the authors by the SII
In 2010, schizophrenia-related job disability social security benefits amounted to over PLN 940 million. The main component were job disability pensions, which constituted 98% of the expenditures.

According to NHF figures, 175 945 persons were covered by specialist psychiatric care in 2009 year.

**PLN 940 537 092.44**

Share of individual job disability related social security benefit expenditures due to schizophrenia

- **Job disability + Social pension**: 97.6%
- **Sickness absence**: 1.8%
- **Other (rehabilitation)**: 0.6%

Number of beneficiaries

- **2009**: 102 796
- **2010**: 102 735

Direct costs of Schizophrenia

In 2009, the National Health Fund allocated nearly PLN 450 million to healthcare benefits in schizophrenia treatment, wherein the largest component was the cost of hospital care. In schizophrenia, one day of hospitalization up to 70 days costs PLN 172.5, and for hospitalizations longer than 70 days, the daily cost is PLN 115.

Looking at healthcare benefits in 2009, the NHF allocated a comparable amount to schizophrenia drug reimbursements – PLN 112 million, and PLN 351 million in schizophrenia and bipolar disorder; this constitutes 6% of reimbursement expenditures. Expenditures on these two drug groups fell in 2012 compared to 2009 by 15%, mainly due to reduced spending on oral olanzapine, which constitutes nearly 40% of all drug group expenditures. Schizophrenia disability pensions are by far the largest component of total costs.

According to current state of the art, the widely used pharmacological strategies reduces the frequency of relapses, lowering the rate of re-hospitalizations and therefore reducing the largest component of direct costs. Despite differing country-specific
Institutionalization – risk factors

A Danish study defined factors that increase the risk of institutionalization, i.e. a long-term stay in a residential medical care facility. These included: the hebephrenic schizophrenia subtype, co-existence of epilepsy, early disability qualification, male sex, earlier beginning of hospitalization, use of psychoactive substances. Institutionalized patients diagnosed with schizophrenia experience a more complicated course of disease with poorer prognosis (with the exception of reduced frequency of suicide), lower education level, higher drug doses in treatment, more frequent combination therapy, longer hospitalisations and higher risk of type II diabetes.

Caregiver burden

The burden of informal care is an issue that has been discussed for years by the scientific community, both from the public health perspective and clinical strategies. Informal caregivers are persons who provide free of charge care in securing the basic necessities and maintaining daily activities. This form of care is usually provided by family members. The positive effect of informal care on schizophrenia patients is undeniable, but it must be remembered that it is not “free” care, as it generates social (indirect) costs.

Caregiver burden is expressed as measurable, detrimental changes in the functioning of the caregiver, caused by – indirectly or directly – the illness and/or dysfunction of the dependant, involving significant changes in everyday household activities, occupational activity, family and social relations as well as somatic health. This burden is incidental to the persistence of the disease process, severity of symptoms and certain socio-demographic indicators, such as: age, sex, level of education and income levels of the caregiver and the patient, as well as degree of kinship between them.

Also important is the influence of this type of care on an often hard to define, but important, mental discomfort resulting from remaining in a relationship with a person affected by a mental disorder, and the ‘stigmatization’ involved in providing care to that person. This is expressed as a subjectively experienced burden, tension, pain and suffering connected to all kinds of psycho-social consequences, such as labelling. It is worth noting that both the non-measurable and measurable caregiver burden involves social costs. In schizophrenia, due to its relatively early onset, persistence of the disease course and the socially pejorative perception of mental disorders, this factor is particularly important. The caregivers’ objective burden can contribute to increased indirect costs through reduced occupational productivity. Caregivers more often limit their occupational activity to provide care, or give up their free time to meet the obligations. Subjective burden measured by, among others, quality of life (QoL) indicators is connected to a decrease in the caregivers’ well-being due to stress, more frequent use of healthcare services, higher number of sick leaves and earlier retirement, which also affects productivity. Both types of burdens also contribute to a significant increase in indirect costs of the mental disorder, often exceeding the direct cost of treatment.

Compliance, psychoeducation and social support are necessary to maintain remission
Schizophrenia and employment – the situation in Poland

A field study was conducted to identify the occupational status of patients in Poland. The study was carried out on a quota-random sample of 1010 patients with schizophrenia diagnosis (46% women, 54% men) treated in psychiatric clinics throughout Poland (the population count in individual regions corresponds to the structure of the general population).

As corroborated by international studies, schizophrenia in Poland co-exists with other co-morbidities such as diabetes and hypertension.

Co-morbidities hypertension diabetes obesity

- Obesity: 27%
- Diabetes: 7%
- Hypertension: 13%

Average schizophrenia patient based on study results:

- Age: 38.5 years
- Age at diagnosis: 27 years
- Number of hospitalizations per year: 7
- Number of hospitalizations per year: 47%
- Educated: 26%
- High school: 59%
- Bachelor's: 15%
- Diploma: 19%
- Pensioner: 58%
- Employed: 23%
- Other: 58%

The situation in Poland

Schizophrenia and employment - the situation in Poland

The situation in Poland

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- Employed: 23%
- Other: 58%
Diagnosis, frequency of care

The average age at diagnosis is 27 years. In the definitive majority (73%) of patients diagnosis occurred before aged 30. Within the last 12 months, study participants visited their outpatient clinics 7 times on average.

In the duration of the disease, patients were hospitalized due to schizophrenia more than 3 times on average.

Occupational status of patients

Analyzing the occupational status of patients, there is a clear rise in the percentage of persons on disability as the disease progresses (4% at diagnosis vs. 58% at evaluation), as well as a fall in employment levels (46% and 19%, respectively) employed (full time).

Employment vs. hospitalizations

At diagnosis, 46% of people were employed, and as the disease progressed, nearly three quarters lost their jobs. The percentage of people who lost employment grew with the number of hospitalizations. Among patients with 5 or more hospitalizations, nearly 90% had lost employment, whereas in patients with fewer than 2 hospitalizations nearly half maintained their employment status.

The authors’ analysis of the occupational status of patients diagnosed with schizophrenia and hospitalized in the first half of 2013 in Dolnośląskie Centrum Zdrowia Psychicznego Sp. z o.o. in Wrocław shows that out of 311 patients, 12 were employed, 9% (33 were employed on work agreements, 7 ran a private business) Therefore the percentages of employment are similar in outpatient and hospitalized patients populations.

### Occupational status of patients

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage at diagnosis (n=1002)</th>
<th>Percentage at present (n=1007)</th>
</tr>
</thead>
<tbody>
<tr>
<td>student</td>
<td>5%</td>
<td>23%</td>
</tr>
<tr>
<td>pensioner</td>
<td>4%</td>
<td>58%</td>
</tr>
<tr>
<td>unemployed with benefits</td>
<td>4%</td>
<td>16%</td>
</tr>
<tr>
<td>unemployed without benefits</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>employed (full time)</td>
<td>34%</td>
<td></td>
</tr>
<tr>
<td>others forms of employed (full time)</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>own business activity</td>
<td>4%</td>
<td>2%</td>
</tr>
<tr>
<td>Never been employed</td>
<td>7%</td>
<td>5%</td>
</tr>
<tr>
<td>agriculturalist</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>retired person</td>
<td>0%</td>
<td>1%</td>
</tr>
</tbody>
</table>

At diagnosis (n=1002) at present (n=1007)
Schizophrenia and employment – the situation in Poland

**Employed at time of diagnosis**

<table>
<thead>
<tr>
<th>Number of hospitalizations</th>
<th>≥5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment (%)</td>
<td>44%</td>
<td>48%</td>
<td>45%</td>
<td>56%</td>
<td>43%</td>
<td>41%</td>
</tr>
</tbody>
</table>

**Employment vs hospitalizations**

<table>
<thead>
<tr>
<th>Number of hospitalizations</th>
<th>≥5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment (%)</td>
<td>93%</td>
<td>83%</td>
<td>82%</td>
<td>59%</td>
<td>41%</td>
<td>54%</td>
</tr>
</tbody>
</table>

**Pensions in schizophrenia**

At diagnosis, 4% of study subjects were on pensions, compared to 58% at the time of the study. Regions with the highest rates of approved schizophrenia-related pensions include: Podkarpackie 85%, Łódzkie and Warmińsko-mazurskie at 77% each, Podlaskie and Zachodniopomorskie at 73%.

Lowest rates were found in the following regions: Opolskie 20%, Dolnośląskie 31% and Pomorskie 32%. 57% men and 52% women qualified for pension benefits. Persons with higher education (45%) and incomplete higher education (34%) were less likely to qualify for pensions compared to persons with lower vocational education (68%) and primary education (58%).

**Patients on disability by education**

- Higher: 45%
- Incomplete higher: 34%
- Secondary: 55%
- Vocational: 63%
- Primary: 58%

**Persons qualifying for pensions (%)**

<table>
<thead>
<tr>
<th>Number of hospitalizations</th>
<th>≥5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persons qualifying (%)</td>
<td>74%</td>
<td>68%</td>
<td>58%</td>
<td>51%</td>
<td>34%</td>
<td>22%</td>
</tr>
</tbody>
</table>
The number of hospitalizations significantly influenced the increase of the pension qualification rate. 22% of non-hospitalized patients received pension benefits, compared to 74% of patients who received 5 or more hospitalizations.

Older age at diagnosis negatively impacts not only the ability to remain employed, but also increases pension qualification rate. This rate is 47% for persons diagnosed with schizophrenia before age 20, and 61% for persons over the age of 30.

46% of patients were employed at the time of diagnosis

19% patients with schizophrenia are employed

72% of those employed at diagnosis have since lost employment

58% of schizophrenia patients collect disability benefits

In 2010, more than 102,000 people collected schizophrenia-related job disability pensions.

Therefore, appropriate care for schizophrenia patients, aside from typically medical interventions, should also focus on maintaining the patients’ social roles from the time of diagnosis, by enabling further education and retention in the job market.

Summary

Modern pharmacotherapy combined with a rehabilitative approach now enable a positive influence on the natural disease process by reducing the frequency of relapses, limiting the risk of exacerbation of stigmatizing negative symptoms and minimizing the somatic consequences of co-morbidities.

These activities are also reflected in health economics. The high share of social costs involved in this disorder is reflected in direct costs, but mainly in indirect costs. One important element of these costs is the reduced productivity of patients through loss of employment. The study has shown that nearly 47% of persons had been employed at diagnosis, but 80% of hospitalized patients eventually lost employment. Among persons working at the time of diagnosis, as many as 65% qualified for pensions in the course of the disease. It should be noted that there were more than 102,000 people in Poland collecting schizophrenia-related pensions in 2010, to which ZUS allocated more than PLN 940 million.
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79. Przedstawione dane dotyczące świadczeń z tytułu niezdolności do pracy z powodu schizofrenii zostały udostępnione autorom przez ZUS.

80. Przedstawione dane dotyczące specjalistycznej opieki psychiatrycznej zostały udostępnione autorom przez NFZ.


Content consultation:
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Healthcare Institute Board