

The European studies on mortality in schizophrenia

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Summary

Introduction. Schizophrenia is a chronic and one of the most severe mental disorders. From many years studies regarding mortality among people suffering from schizophrenia are being conducted as a way of controlling indirectly the effectiveness of medical care and therapy.

Aim. The aim of this paper was to determine the course of studies of mortality in schizophrenia and to analyse possibilities of using this kind of studies to evaluate changes in mental care system in Poland.

Material. This paper is a review of European literature concerning studies of mortality in schizophrenia. Most of the analysed publications were created in Northern and Western Europe. There are no international publications originating from Southern and Eastern Europe. Directions of current studies include changes of causes of death in persons with a diagnosis of schizophrenia over years, coexistence of somatic diseases, medicine's impact on mortality in schizophrenia and worse access to medical care in comparison to mentally healthy people.

Conclusions. Mortality in schizophrenia is a useful factor in clinical studies enabling evaluation health effects of changes in mental health care system, what allows creation of system based on scientific evidence.

Key words: schizophrenia, mortality, epidemiology

Introduction

Schizophrenia is a chronic and severe mental disorder, aetiology of which is not yet fully understood. Aside of typical psychopathological symptoms that are the diagnostic criteria of this disorder, various somatic diseases such as chronic obstructive pulmonary disease, diabetes, metabolic syndrome occur more frequently during the course of schizophrenia than in general population. Additionally, addictions in schizophrenia are more common, especially to nicotine and alcohol, which are risk factors of many somatic diseases [1–3]. It is thought that occurrence of these illnesses, as well as

suicides and adverse effects of antipsychotic medicines, is responsible for significant reduction of average life expectancy of people with schizophrenia [4].

Mortality studies are one of the ways of controlling effectiveness of health care and medical treatment [5]. In the European tradition, common were studies concerning the amount of deaths directly caused by illness and also concerning the mortality in people suffering from a specific disease based on data from institutional registers. They began to be conducted in the first half of 19th century [6, 7].

Historical background

Studies on mortality in schizophrenia have been conducted for many years and they consequently show that mortality from both natural and unnatural causes is higher in patients with schizophrenia than in general population [4]. Main causes of death, standardised mortality ratios (SMRs) and mortality gap (MG) has changed over years. According to studies, causes of death also differ depending on the age of patients [5].

In the studies from years 1916–1933, the highest mortality rate ratios (MRRs) regarded tuberculosis (MRR = 7.8), pneumonia and acute infectious diseases while the lowest MRRs concerned heart diseases and neoplasms [8]. During World War I and II, particular growth of mortality was caused by malnutrition. Similarly, in Sweden the highest MRR in comparison to general population regarded tuberculosis (MRR = 5.6 for males, MRR = 8.6 for females) and respiratory system diseases (4.5) while in cases of circulatory system diseases, neoplasms and accidents no growth of mortality was reported. After dealing with tuberculosis and other infectious diseases, respiratory diseases became the most common cause of death in Norway, especially in elder population. In the years 1950–1970 most common causes of death in persons with schizophrenia were: circulatory system diseases followed by respiratory system diseases, neoplasms and tuberculosis. In another Norwegian research that covered years 1926–1974, gradual increase in mortality caused by circulatory system diseases was observed and in years 1950–1974 an increase in mortality due to accidents was noted. In years 1954–1959 in USA, the most common causes of death in patients with schizophrenia, similarly to general population, were coronary artery disease and malignant tumours. Finally, in the 70s, 80s, 90s of the 20th century, the all-cause median SMRs were: 1.84, 2.98, 3.2; respectively [4].

MG is a parameter that determines the difference in mortality between general population and population of people with schizophrenia. Publications from the last decade suggest that MG has been growing until mid-90s, later, depending on the research, it remained on constant level, slightly increased or decreased [5, 9]. Yet studies published in years 2009–2013 reveals appearance of negative tendencies in relation to mortality ratios in people with schizophrenia and to MG [10–12]. Higher mortality from natural causes, especially circulatory system diseases and neoplasms, is observed [13]. The difference in evaluated life expectancy between people with schizophrenia and general population, which even until now has been wide (18.7 for males, 16.3 for females) [14], is growing. The Danish research results suggest more negative tendencies than British results, in which life expectancy gap reached 14.6 years for males

and 9.8 years for females [15]. One of the studies presented slight decrease of average length of life in people with schizophrenia over the last 30 years [10], what is a very alarming data. However, the results of a simulation showed that preventive measures and a better health care can drastically decrease the amount of premature deaths, but they will not eliminate MG entirely [16].

In Northern and Western Europe, studies of mortality in schizophrenia have been conducted for several dozen years [17, 18] while in Eastern and Southern Europe mortality in schizophrenia does not receive adequate attention, which implies no international publications regarding this topic. In the only Polish study conducted in years 1975–1988 in the cohort of 750 patients with schizophrenia, increase of SMR in both genders (1.96 for males, 2.25 for females) in comparison to general population has been demonstrated. The highest growth of SMR was observed when suicides were the cause of death (51.35 for females and 37.66 for males). The most common cause of death for males were suicides (38.2% of deaths) and for females – circulatory system diseases (27.5% of deaths) [19].

Method

PubMed database was searched using the Medical Subject Headings (MeSH) tool with the following terms: heading Schizophrenia with subheading Mortality in conjunction with the heading Europe (“Schizophrenia/mortality” [Mesh]) AND “Europe” [Mesh]. The following filters were selected: full-text article available, published in the time interval from 1 January 2009 until 31 December 2013, species: humans, written in English. 44 papers in various ways related to the subject of mortality in schizophrenia were found.

Analysis of current literature

The analysed studies were cohort studies with usually large study groups. Group selection and further observation was possible due to various databases: national, local, hospital, university and insurance registers.

Authors emphasised heterogeneity of study groups. Part of the studies concerned inpatients, so it can be concluded that those patients suffered from symptoms of greater severity than the others [20–22]. In other studies included only patients who had contact with general practitioner [23]. It should also be remembered that frequency of patients' contact with health care institutions was different, so the conclusions might be inaccurate in regard to the whole group [24, 25]. Observation periods of different cohorts in respective studies varied, but none of those studies was continued to the moment of the death of all cohort members, which can also have impact on obtained results.

Most of the studies, apart from schizophrenia, also included addictions [24–26], affective disorders [14, 16, 20, 22, 25–27], schizoaffective disorders [9, 11, 16, 20, 22, 25, 26, 28–30] and other psychoses [12, 21, 26], as well as comorbidity with chronic somatic diseases [27]. In some of the papers, separate statistical analysis regarding people with schizophrenia were not calculated, but study groups consisted of persons

suffering from either schizophrenia or one of the following diagnoses: schizoaffective disorder [11, 28–30], schizotypal disorders [9], other psychotic and delusional disorders [16, 22] or the study group consisted of patients with severe mental illness [20, 26]. There were also significant differences in the number of samples (from 28 persons to more than 66,000). Such a large heterogeneity of groups in respective studies makes it impossible to conduct a comparative analysis of these papers.

In many researches, the influence of medications taken by patients on mortality was not taken into consideration. Most frequently used medications were: antipsychotic drugs, mood stabilisers, antiepileptic drugs, antihypertensive drugs and antidiabetic drugs [23, 31–33].

Current research direction

Researchers compared mortality in specific region in different years and different time periods, life expectancy between people with schizophrenia and general population and tried to evaluate expected life expectancy. In many studies, causes of death among people with schizophrenia and differences between them over the years were analysed. Many publications describe the impact of various personal, social and health-related factors on the course and mortality in persons with schizophrenia with special consideration of comorbidity between schizophrenia and somatic diseases (i.a. heart and circulatory system diseases, diabetes, obesity, neoplasms) [12, 13, 20, 23, 32, 34, 35] and other mental disorders, including addictions [30, 35]. It was common to observe the impact of antipsychotic drugs on the course of the disease and mortality [9, 21, 31, 33, 36–38]. Researchers were also interested in differences in mortality between in – and outpatients [39] and also in the impact of different health care organisation models on mortality [40].

Pharmacotherapy

Pharmacotherapy with first generation antipsychotics (FGAs) is associated with higher mortality rates in comparison with treatment with second generation antipsychotics (SGAs), despite their adverse effects on metabolic parameters [41, 42]. A possible explanation for this may be that the patients who receive FGAs, trying to counter their side effects, smoke cigarettes more frequently, which results in higher risk of death from tobacco-related causes [33]. During the course of therapy with typical antipsychotics, tardive dyskinesias may also occur, what may be associated with twice as high risk of death., mortality rates in patients with schizophrenia treated with mood stabilizers also proved to be unexpectedly high [33]. Authors of the paper, considering possible causes of such a significant increase of the MRR in this group of patients, indicated an increased risk of developing a cardiovascular disease, associated with body weight gain observed during the treatment with anticonvulsant drugs, as well as a higher incidence of suicidal ideation and suicidal behaviour associated with receiving medications of this group. It is also assumed that patients in whom mood stabilizers are required present the symptoms of the disease of higher severity, with

consequently higher mortality to be expected in them [33]. Due to the considerably elevated hazard ratio (HR) parameter amounting to 8.42 and given the lack of adequate data from other studies, it requires a particular attention of researchers and verification of these results in future studies.

Systemic change of mental health care model

The primary objective of the Mental Health Action Plan for 2013–2020 developed by the World Health Organization (WHO) is promotion of mental well-being, prevention of mental illness, providing care, increasing curability, promotion of human rights and reducing mortality, morbidity and disability of persons with mental disorders. One of the means in which this aim is to be achieved is shifting the emphasis from institutional mental health care model toward a community-based one, using coordinated networks based mainly on local communities and application of various forms of assistance [43]. A similar objective and method of its implementation (i.a. emphasis on the community-based model of care, access to various forms of support and social assistance, coordination of different forms of care and support, better access to mental health care) has been included in the Polish National Programme on Mental Health Care (NPOZP) for 2011–2015. Researchers are recently pointing out that the aim of a quality health care for persons with schizophrenia should not only be the remission of symptoms, but also to a possibly high extent (depending on the individual abilities of each patient) the return to the social and professional activity, which would result in a much better quality of life [44], while during the acute period of a mental crisis, stress has to be put on the suicidal risk assessment and prevention, as patients with schizophrenia are at particular danger of committing suicide [45].

An ongoing trend is to shift mental health care model toward outpatient health services: between 2008 and 2012 the number of total capacity of daily wards increased from 3,271 to 4,302 while the total number of inpatient beds decreased from 17,286 to 16,174 [46]. It is also to be noted that the number of patients with psychotic disorders (mainly schizophrenia) treated in outpatient clinics is growing, whereas the amount of hospitalisations is becoming lower [1].

In the Finnish study, basing on a 5-year follow-up of patients with the first episode of schizophrenia, who were divided into two groups: hospitalised and never hospitalised, it was found that after adjusting for age, sex and somatic diseases, the overall risk of death was elevated among hospitalised patients, compared to those not hospitalised (HR = 1.97; 95% CI: 1.44–2.69). Suicides accounted for 2% of deaths in patients with schizophrenia who were hospitalised and for 0.5% of deaths among patients not hospitalised, with significantly increased risk of death due to suicide (HR = 4.52; 95% CI: 1.98–10.32) in hospitalised patients compared to the patients with a diagnosis of schizophrenia who were never hospitalised [39].

The implemented system put greater emphasis on community-based care involving the patient's social environment, thus allowing for the formation of social support networks that can help the patient in the current and subsequent crises or relapses of the disease and aids in reducing the stigma which surrounds the patient and his family [1].

Mortality – mental health care programmes

The authors of WHO Mental Health Action Plan for 2013–2020 emphasise the disproportionately higher mortality and disability among people suffering from mental illness when compared to the general population. One of the main objectives included in the programme is to reduce the overall mortality among the mentally ill persons, and one of the secondary objectives is to improve the system of information containing, among many others, data concerning the health status of patients, including mortality at the population level [43]. In the Polish NPOZP, to date, this issue has not been raised at all [47].

Access to health care

The results from recent years indicate that persons suffering from severe mental disorders do not receive medical care at the same level as people who have never been under psychiatric treatment, so the gap between the life expectancy of persons with schizophrenia and that of general population increases. One of the arguments supporting this claim is a similar incidence of cancer and heart infarcts in patients with schizophrenia compared with patients without the burden of this condition, with simultaneously increased mortality rates from these diseases in patients with schizophrenia [13]. It is confirmed by the results of the study [20] among persons hospitalised in the past for schizophrenia, schizoaffective disorder or bipolar disorder getting to the hospital due to the heart disease. The frequency of performing invasive procedures of the heart was almost twice lower in this group compared with those who had never been hospitalised due to severe mental illness [20]. Similarly, the results indicating that in patients who died of a heart attack or from cancer, these disorders more often than in the general population were undiagnosed before death [13], suggest that people with schizophrenia have worse access to screening as well as to diagnostic tests when the symptoms of coronary heart disease or cancer have already developed.

Even though a survey conducted in 2009 among psychiatrists in Poland indicates that they are significantly interested in the somatic diseases that their patients suffer from, it appears that a better cooperation between psychiatrists and general practitioners as well as other specialists (for example, considering the Australian model, in the form of a multidisciplinary team of physicians taking care of the patient) would provide health benefits for patients with schizophrenia [48].

Increased mortality rate from cancer in patients with schizophrenia is consistent with the results of the recent studies [4, 34, 49] and is in contrary to the historical reports of a presence of an unknown factor protecting patients with schizophrenia from cancer [50].

Recapitulation

Over the years, the most common causes of death among people with schizophrenia have changed, as well as changed the rate of the respective causes of death in compari-

son with the general population. Mortality in studies on schizophrenia is a useful and valuable endpoint [5]. A comprehensive evaluation of the quality of mental health care is not possible in the absence of data regarding the mortality in a specified population of patients, the greater the research sample, the greater is its statistical power and its results have higher significance: the best examples are the Danish [20] and the Finnish [9] studies. Every study has its limitations, in the reviewed papers heterogeneity of the research samples were a common problem (different diagnoses among the entire study group, changing diagnostic criteria of the same disease over the observation period), or, on the contrary, the criteria for patient inclusion (e.g. only inpatients) did not allow to examine the entire cross-section of patients with a given diagnosis. The problem in some papers was also the lack of possibility to take the medications received by patients, which have a significant impact on mortality, into consideration – due to the limitations of medical data records. However, access to the data registers containing the diagnosis of patients with mental disorders, employed treatment and death records including their verified causes, is crucial in studies on mortality, results of which indirectly inform about the quality of health care. It has its reflection in the quantity and quality of papers on mortality in schizophrenia being published i.a. in Northern and Western Europe. On the other hand, there are no current papers regarding mortality in schizophrenia from Southern Europe and Central-Eastern Europe, including Poland. This results in the fact that in the period of transition in the mental health care, from an epidemiological point of view, it will be difficult to evaluate the effects of the systemic changes to the model of mental health services in this area. Providing Polish researchers with the access to medical data registers appears to be the primary task for persons who shape the health care system, creating the possibility to base it on the pillars of scientific evidence. Meanwhile, Western-European studies can suggest the right direction, i.e. deinstitutionalisation and putting the emphasis on community care, creation of suicide and accidents prevention programmes or broadly defined primary and secondary prevention of somatic diseases with the improvement of access of patients with a diagnosis of mental disorder to screening and diagnostic tests. Pension prevention programmes which may improve the patients' quality of life [44] and, on the other hand, allow for reduction of the costs of social welfare [1], could also be effective. However, the actual efficacy of these measures, if implemented, and cost-effectiveness of the financial means allocated to them, without a large-scale research conducted in Poland will remain unknown.

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