ELSEVIER

European Neuropsychopharmacology 15 (2005) 399 – 409

EUROPEAN NEURO-PSYCHOPHARMACOLOGY

www.elsevier.com/locate/euroneuro

Size of burden of schizophrenia and psychotic disorders☆

Wulf Rössler[a,*], Hans Joachim Salize[b], Jim van Os[c], Anita Riecher-Rössler[d]

[a]*Psychiatric University Hospital, Militärstrasse 8, CH-8021 Zurich, Switzerland*
[b]*Central Institute of Mental Health, Mannheim, D, Switzerland*
[c]*Department of Psychiatry and Neuropsychology, Maastricht University, NL, Switzerland*
[d]*University Psychiatric Outpatient Department, University Hospital Basel, CH, Switzerland*

Abstract

Schizophrenia is a severe mental disorder characterised by fundamental disturbances in thinking, perception and emotions. More than 100 years of research have not been able to fully resolve the puzzle that schizophrenia represents. Even if schizophrenia is not a very frequent disease, it is among the most burdensome and costly illnesses worldwide. It usually starts in young adulthood. Life expectancy is reduced by approximately 10 years, mostly as a consequence of suicide. Even if the course of the illness today is considered more favourable than it was originally described, it is still only a minority of those affected, who fully recover. The cumulative lifetime risk for men and women is similar, although it is higher for men in the age group younger than 40 years. According to the Global Burden of Disease Study, schizophrenia causes a high degree of disability, which accounts for 1.1% of the total DALYs (disability-adjusted life years) and 2.8% of YLDs (years lived with disability). In the World Health Report [The WHO World Health Report: new understanding, new hope, 2001. Geneva], schizophrenia is listed as the 8th leading cause of DALYs worldwide in the age group 15–44 years. In addition to the direct burden, there is considerable burden on the relatives who care for the sufferers. The treatment goals for the moment are to identify the illness as early as possible, treat the symptoms, provide skills to patients and their families, maintain the improvement over a period of time, prevent relapses and reintegrate the ill persons into the community so that they can lead as normal a life as possible.

Keywords: Psychosis; Schizophrenia; Epidemiology; Burden; Costs; Gender differences; Early detection

1. Introduction

Schizophrenia and psychotic disorders are combined in the chapter F2 of the International Classification of Diseases (ICD-10). It is a heterogeneous category, mainly merged for practical reasons. The most frequent and most important illness group is schizophrenia. This illness entity was first described by Emil Kraepelin (1896). He separated schizophrenia from manic-depressive illness, initially naming the syndrome "Dementia praecox". The term schizophrenia, not introduced until 1911, was coined by Eugen Bleuler (1911).

More than 100 years of research have not been able to fully resolve the puzzle that schizophrenia represents, but much progress has been booked over the last two decades. Schizophrenia behaves epidemiologically like other complex disease phenotypes, such as diabetes and cardiovascular disease, in that the disease tends to cluster in families; yet genetic factors appear to be neither necessary nor sufficient to produce illness onset (Murray et al., 2003). Thus, the causation of schizophrenia involves multiple interactions between genes and environment over the life course (van Os and Marcelis, 1998)–probably often starting as early as fetal life (Susser et al., 1999)–and leaving traces in the early social, motor and cognitive development of children later destined to develop schizophrenia (Jones et al., 1994). Four-fifths of the differences in liability to schizophrenia are

☆ This paper was prepared in the framework of the European College of Neuropsychopharmacology (ECNP) Task Force project on "Size and Burden of Mental Disorders in Europe" (PI: Hans-Ulrich Wittchen) supported by funds of the ECNP Council and the European Brain Council (EBC; http://www.ebc-eurobrain.net) Initiative "Cost of Disorders of the Brain in Europe" (CDBE; steering committee: Jes Olesen, Bengt Jönnson, Hans-Ulrich Wittchen).

* Corresponding author. Tel.: +41 1 296 74 00; fax: +41 1 296 74 00.
E-mail address: roessler@spd.unizh.ch (W. Rössler).

0924-977X/$ - see front matter © 2005 Elsevier B.V. and ECNP. All rights reserved.
doi:10.1016/j.euroneuro.2005.04.009

attributable to genes and the first probable risk genes have been identified, although their function remains unclear (Harrison and Owen, 2003). Their effects are small and many may be involved. They are likely to interact with environmental exposures that impact on the individual over the life course, such as fetal hypoxia (Cannon et al., 2002), the proxy environmental risk factor: season of birth (Mortensen et al., 1999), adverse rearing environments (Tienari et al., 2004), the stresses of urban life during upbringing (van Os et al., 2003, Spauwen et al., 2004), cannabis use (Verdoux et al., 2003), stress in daily life (Myin-Germeys et al., 2001) and a minority position (Hutchinson et al., 1996). The causes of schizophrenia impact on brain development, as evidenced by a small reduction in the volume of grey matter (Wright et al., 2000) that appears to progress over time, and may be linked to social deterioration, use of medication or factors intrinsic to the disease itself (Cahn et al., 2002, Ho et al., 2003a,b).

2. Incidence and prevalence of schizophrenia

Schizophrenia occurs worldwide. *Incidence* seems to be very similar worldwide, at least if schizophrenia is narrowly defined, i.e. with a nuclear schizophrenic syndrome consisting mainly of first-rank systems at onset (Sartorius et al., 1986; Jablensky et al., 1992). With a wider disease concept, reported rates vary between and within countries. From the lowest (0.3 per 1000) to the highest (22 per 1000) (Torrey, 1987; Hovatta et al., 1997) *prevalence rates*, there are more than 50-fold variations, with differences being due partly to differing observation times and methodology, and partly to true differences (see Wittchen and Jacobi, 2005). Lifetime prevalence has been reported in the range of 0.5% to 1.6%; i.e. out of 100 individuals, about one will experience a schizophrenic episode in his lifetime (Jablensky, 1995).

Concerning *European prevalence rates*, a recent German survey (Wittchen et al., 2000; Jacobi et al., 2004) names a 12-month prevalence rate of 26 cases and a lifetime prevalence of 45 cases for having any psychotic syndrome per 1000 population of 18–65 years. Psychotic syndromes as defined in this study include schizophrenia, schizoaffective, delusional disorders as well as psychotic syndromes occurring in the course of depressive and bipolar disorders. The Munich Follow-up Study (Wittchen et al., 1992) found a lifetime prevalence rate of 7 per 1000 for schizophrenia and schizophreniform disorder. In a Dutch survey, the lifetime prevalence rate for schizophrenia was 4 and the 12-month prevalence rate 2 per 1000 (Bijl et al., 1998). Jenkins et al. (1997) found in a household survey in Great Britain a 1-year prevalence of 4 per 1000 (including psychotic disorders according to ICD-10 chapters F20 and F30).

As regards *incidence* rates, the "Determinants of Outcome of Severe Mental Disorders", DOS Study by the WHO was one of the first methodologically sound, representative studies on worldwide incidence rates for schizophrenia (Jablensky et al., 1992; Sartorius et al., 1986). Departing from a narrow schizophrenia concept, between 0.7 and 1.4 cases per 10,000 population were found to arise in 1 year. Based on a wider concept, the incidence was 1.6 to 4.2 cases per 10,000 population and per year. These figures correspond well to those found in the German ABC Study, which was one of the first representative European studies on all first-admitted patients from a defined catchment area. It found incidence rates of 1.7 per 10,000 and year for ICD-schizophrenia only and 1.9 per 10,000 and year using a wider disease concept that also included paranoid disorders (Riecher-Rössler et al., 1997).

Independent of variations in incidence rates, recent research suggests that the incidence of schizophrenia may be declining. Such a decline, for example, was reported by Suvisaari et al. (1999). Based on the Finnish population register between 1954 and to 1965, they found for each successive cohort a decline from 0.79 to 0.53 per thousand among males and from 0.58 to 0.41 per 1000 among females. One of the reasons might be the conceptual narrowing of schizophrenia, evidence for which was provided in a recent study (Allardyce et al., 2000).

On the other hand, epidemiological surveys report prevalence rates of hallucinatory and delusional experiences in the general population of between 10% and 15% (Johns and van Os, 2001). These symptoms, although not yet of clinical relevance or associated with substance abuse, obviously do have strong predictive power for the onset of clinical psychotic disorders later in life (Poulton et al., 2000).

3. Course

In his first descriptions, Kraepelin expressed a very pessimistic view of the course of the illness. He was of the opinion that the illness follows a path of continuous progression with persistent and serious symptoms in over 70% of the cases. Today, we know that this poor course was mainly due to Kraepelin's selected samples of long-term hospitalised patients living in the deprived environment of isolated asylums. Since then, numerous studies have shown a better course. Hegarty et al. (1994) identified a total of 821 studies on the course of schizophrenia that were carried out between 1895 and 1992: Of these, 320 satisfied methodological standards. In this meta-analysis, 40.2% of the patients were considered to have improved after follow-ups averaging 5.6 years. The proportion of patients who improved increased significantly after mid-century. In the 1980s, the outcome seemed to deteriorate again. However, this finding was probably mainly an artefact, reflecting the re-emergence of narrow diagnostic concepts.

The largest studies on the course of schizophrenia have been coordinated by the WHO. Within the framework of the so-called "Disability Study", An der Heiden et al. (1995) conducted a 14-year follow-up assessment of the German sample in Mannheim. About one third of the patients still showed delusions or hallucinations. Almost the same