ORIGINAL PAPER

Paul E. Bebbington · Matthias Angermeyer · Jean-Michel Azorin · Traolach Brugha · Reinhold Kilian
Sonia Johnson · Mondher Toumi · Åsa Kornfeld for the EuroSC Research Group

The European Schizophrenia Cohort (EuroSC)
A naturalistic prognostic and economic study

■ **Abstract** *Background* Schizophrenia has a variety of clinical profiles, disabilities and outcomes requiring responsive management and the devotion of considerable resources. The primary objective of the European Schizophrenia Cohort (EuroSC) is to relate the types of treatment and methods of care to clinical outcome. Secondary objectives include the assessment of treatment needs in relation to outcome, the calculation of resource consumption associated with different methods of care, and the identification of prognostic factors. *Method* EuroSC is a naturalistic follow-up of a cohort of people aged 18 to 64 years, suffering from schizophrenia and in contact with secondary psychiatric services. The study was done in nine European centres, in France (*N*=288), Germany (*N*=618), and Britain (*N*=302). Participants were interviewed at 6-monthly intervals for a total of 2 years. This initial paper describes the methods used and presents clinical and social baseline data. *Results* The clinical and sociodemographic differences between patients from the different countries were small. However, patients from Britain were considerably more likely than their continental counterparts to have a history of homelessness, rooflessness or imprisonment, even when social and clinical differences between the samples were controlled. *Conclusions* The samples were largely similar in clinical terms. Thus, the social differences between the samples seem likely to be due more to the societal context and may reflect relatively benign situations in the continental locations of our study.

Prof. P. Bebbington (✉) · Dr. S. Johnson
Royal Free and University College Medical School, UCL
Dept. Mental Health Sciences, (Bloomsbury Campus)
Wolfson Building
48 Riding House Street
London W1W 7EY, UK
E-Mail: p.bebbington@ucl.ac.uk

Prof. M.C. Angermeyer
Dept. of Psychiatry
University of Leipzig
Leipzig, Germany

Prof. J.-M. Azorin
SHU Psychiatrie Adultes
Hôpital Sainte Marguerite
Marseille, France

Prof. T. Brugha
Section of Social and Epidemiological Psychiatry
University of Leicester
Brandon Mental Health Unit
Leicester General Hospital
Leicester, UK

Dr. R. Kilian
Klinik und Poliklinik für Psychiatrie
Universität Leipzig
Leipzig, Germany

Dr. M. Toumi · Å. Kornfeld
Health Economics Dept.
Lundbeck S.A.
Paris, France

Introduction

Schizophrenia is a complex disorder with a variety of clinical profiles, disabilities and outcomes [23]. Many western European countries have seen a shift in the balance of care for people with schizophrenia, such that they are increasingly managed in the community. Nevertheless, many of these people are symptomatic even while living in their own homes [39]. Their disability renders them vulnerable to the stresses of everyday living [9]. We are now beginning to quantify the enormous resources consumed in the management of schizophrenia [31, 32, 35, 46].

One way of studying the economic consequences of illnesses is to divide overall health costs of various types according to their use by specific diagnostic groups. However, this is something of a blunt instrument, given the poor quality of diagnostic and eco-

nomic information within health care systems. Studies based on intensive investigation and assessment of a specified group of consumers are expensive but better able to establish specific information of good quality. The most generalizable type is an observational epidemiological investigation. In this, it is possible to compare the 'real-world benefits' of different treatments and their associated costs; such evaluations are classically described as *pragmatic*, as opposed to *explanatory* [50]. The natural experiments inherent in such observational studies may be amplified by studying course and outcome in relation to different forms of service delivery.

Observational studies are by definition unable to control the quality and comprehensiveness of therapeutic intervention. Routine psychiatric services are never perfect, and needs for care may not be met [6, 8]. Shortfalls from ideal treatment are likely to be an important determinant of outcome, and there are therefore good grounds for incorporating measures of need and of unmet need in naturalistic studies. Case management models for psychosis, which have been developed from theoretical and non-systematic clinical observation, are seen by many to have failed to deliver improved outcomes [13]. Data from systematic, prospective observational studies of psychopathology and care can be used to inform the development of more effective case management strategies.

The study described here is of this type: a naturalistic follow-up of a cohort of people suffering from schizophrenia for a period of 2 years. The study was done in nine European centres: two in Britain, four in Germany and three in France. The specific locations were chosen because they are socio-demographically distinct and have different styles of service delivery.

The principle objective of the study is to identify and describe the types of treatment and methods of care for people with schizophrenia and to correlate these with clinical outcomes, states of health, and quality of life. Secondary objectives include the assessment of outcome in relation to judgements of treatment needs and the extent to which these are met, the calculation of resource consumption associated with different methods of care, and the identification of prognostic factors relating to the evolution of schizophrenia in the community. The data obtained in this way will be used as the basis of analytic models linking clinical status, pharmacological and non-pharmacological treatment, adverse events, resource consumption and outcome, and to inform improved care and services.

The current, initial paper describes the methods used in some detail and provides a description of the samples from the three countries. It reports analyses relating to the patients' experience of certain types of social exclusion: homelessness, rooflessness and imprisonment.

Methods

■ Description of study centres

France

In France, mental health care is driven by a law defining 800 catchment areas. Each catchment area has around 70,000 inhabitants. Within the catchment area, care is provided by a public health maintenance organisation called a 'sector' [33]. The sector provides inpatient as well as out-patient care.

Resources are unequally allocated between sectors. The strategy was therefore to integrate ten adjacent sectors into a single sampling area. Three such integrated areas were selected. They were located in northern France (Lille), central France (Lyon and Clermont-Ferrand), and southern France (Marseille and Toulon). Each of these areas covers an urban centre of approximately one million inhabitants living in a city or in medium-size towns.

Germany

In Germany, the Länder (regions) are responsible for planning and for implementing federal laws. Despite the unification of Germany, there are still some differences in the health care system between the former West and East Germany [5]. The mental health systems do not encourage continuity of care: patients may be transferred between different medical teams with no coordination between them, and they are free to consult any doctor or team.

The study in Germany was done in four catchment areas: Leipzig and Altenburg in former East Germany, and Hemer and the County of Heilbron in former West Germany. Leipzig is located in Saxony in the former East Germany. The study site covers the city of Leipzig, which has about 490,000 inhabitants. Altenburg is near Leipzig and has about 45,000 inhabitants. The study site encompasses the city and the county of Altenburg, which together have about 120,000 inhabitants living in villages and medium-size towns. The Hemer site is in North Rhine-Westphalia on the outskirts of the Ruhr conurbation. It covers the cities of Hemer, Iserlohn and Werdohl, which together have approximately 160,000 inhabitants. The city of Eppingen is in Baden Würtenberg in the southwest of Germany. It has about 90,000 inhabitants, and the study site covers the city and the surrounding county of Heilbron, which together have about 500,000 inhabitants living in villages and medium-size towns.

United Kingdom

In the United Kingdom the government has placed great emphasis on the *care programme approach*, whereby there is active planning of care between all responsible agencies, with particular emphasis on initiatives at the point of discharge from hospital [27]. For each patient, a care coordinator is responsible for monitoring, implementing and organizing care. The care programme approach has been widely and effectively implemented, although there is still some variation, especially in inner-city areas where resources are particularly stretched. For this reason, we chose two centres, Islington, a socially deprived inner-city area of London, and a reasonably affluent semi-rural area of Leicestershire. Islington is a London borough with a population of 176,000. Despite localities of considerable affluence, it is one of the ten most deprived areas in England. The part of Leicestershire chosen excluded the city of Leicester and its suburbs, and therefore comprised a mix of villages and medium-sized towns with a population of approximately 330,000.

■ **Patient selection**

In each centre, a cohort of patients suffering from schizophrenia and in contact with secondary psychiatric services was identified and assessed. For pragmatic reasons we chose to restrict participants to those aged 18–64, as this is the range covered in general adult services. Again for pragmatic reasons, we also excluded people who were currently living on the streets. One thousand two hundred and eight patients with schizophrenia were included in the study, 288 in France, 618 in Germany, and 302 in the UK. The centres and sampling procedures were chosen to suit the national organisation of mental health care and the information systems that could be exploited for the study.

The participants were selected to provide a representative sample of the patients treated in secondary psychiatric services in each catchment area. Depending on the organization of the health care system and of patient management, two different strategies were adopted: random sampling and exhaustive inclusion.

Where possible, random sampling was used. It was feasible in all the French centres and in London (Islington). It involved the establishment of a list of all psychotic patients in the catchment area. In France, an ongoing list of patients with *International Classification of Disease, 10th Edition* (*ICD-10*) diagnostic information is updated on a regular basis in the catchment area, and these lists were used as the basis of sampling. Ten patients who met the study criteria were randomly selected from each sector. The sample was based on people currently in contact. None of the patients was picked up purely through a social service route.

In Islington, a list was created based on the electronic Patient Administration System. Participants were eligible for inclusion if they had been in contact with secondary psychiatric services within the previous 4 years. Thus, in this centre, participants might now no longer be in contact with secondary services. Those who, on perusal of their case notes, clearly did not have schizophrenia were then removed from the list. Patients from the list were chosen at random for inclusion in the sample. They were screened to confirm informed consent and whether they met the inclusion/exclusion criteria. They were enrolled sequentially until the required sample size was achieved.

Exhaustive inclusion involved the definition of a smaller catchment area, with the aim of including all patients with schizophrenia in the area. All mental health services in the area were contacted to identify patients who were or had been treated by them. Patients were screened to establish informed consent and whether they met the inclusion/exclusion criteria. Once more, they were enrolled in sequence until the required number was obtained.

Exhaustive inclusion was the basis of sampling in the German centres and in Leicestershire. In Leicestershire and Eppingen (county of Heilbron), the initially defined catchment areas were extended during the study, as the target number of patients had not been reached when all those identified had been included.

Inclusion criteria

Patients who met all of the following criteria were eligible for the study:

- The participant was aged between 18 and 64 years at the time of enrolment in the study.
- Based on information obtained at the first interview, the participant had a diagnosis of schizophrenia according to *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition* (*DSM-IV*) criteria [3].
- The participant had given signed informed consent.

Exclusion criteria

Patients who met one or more of the following criteria were not included in the study:

- Theparticipant had been hospitalised for the last 12 months.
- The participant was currently roofless, that is, living rough on the streets (although other homeless patients could be included).
- The participant was planning to move during the study period in a way that made it impossible to perform the follow-up visits.

Table 1 Study design flow chart

	Baseline	6 Months	12 Months	18 Months	24 Months
Inclusion/exclusion criteria	*				
Signed informed consent	*				
Socio-demographic information	*				*
Past history (medical/medication history) clinical and social	*				
SCAN (section 11 and 12)	*				
SCAN	UK	UK	UK	UK	UK
Diagnosis DSM IV ICD10	*				*
Clinical assessment					
PANSS	*	*	*	*	*
CDSS	*	*	*	*	*
CGI 1 (severity)	*				*
CGI 2 (global improvement)		*	*	*	*
GAF	*	*	*	*	*
SSES	*	*	*	*	*
AIMS; BAS, SAS	*	*	*	*	*
GARF	*	*	*	*	*
SOFAS	*	*	*	*	*
Clinical examination, ECG, lab tests, etc., only if performed	*	*	*	*	*
Lehman quality of life, SF 36, EuroQoL	*	*	*	*	*
Adherence (ROMI)	*	*	*	*	*
Adverse events running collection every consultation	*	*	*	*	*
Economic evaluation CSSRI, IEQ	*	*	*	*	*
Others: BPRS, Lebensqualität, WHO QoL, VSSS, CAN	G	G	G		
NFCAS	UK	UK	UK	UK	UK

Withdrawal

- If the participant withdrew consent at any time, data collected up to this point could be included in analysis if the participant did not object.
- If the participant was lost to follow-up, data collected to this point were used in analysis.
- If the participant declined a specific interview but did not rule out participation at a later date, this later information could be used.

The study was observational, as no intervention was made either by or at the behest of the research team. The patients were followed up for a 2-year period, with data collection every 6 months. Table 1 lists the instruments used at each stage.

■ Instruments

The data collected included past psychiatric and service history, socio-demographic information and clinical information. The clinical information covered diagnosis, current psychiatric and social state, needs for care and treatment, quality of life, the consumption of medication, side effects, adherence to treatment, pathway through the care system and the consumption of service resources.

Depending on local requirements and interest, there was some variation between centres in the instruments used, as indicated in Table 1. Assessments of clinical state and quality of life were made every 6 months, based on individual interviews with the patients. Every attempt was made to stick to the planned schedule.

Past History and Sociodemographic Description Schedule (PHSD, WHO) This was adapted for use in the study. The instrument was used in the WHO Collaborative Study on the Assessment and Reduction of Psychiatric Disability, and our adaptation was based on the third draft of 1977.

Follow-up History and Sociodemographic Schedule (FU-HSD, WHO) For the follow-up assessments certain items were selected from the second draft of this WHO instrument (January 1980).

SCAN SCAN [61, 63] includes the tenth edition of the Present State Examination, a semistructured clinical instrument for describing psychopathology. In the current study, we used version 1.0 of SCAN [63]. In the British and German centres, we used a truncated version to provide the data for a *DSM-IV* axis I diagnosis. In the two British centres, SCAN was used at all interviews.

On all occasions, SCAN was used to evaluate the 4-week period before interview. At visit 1, the most significant period of earlier psychopathology was also rated. In the French centres, only the sections on alcohol and drug use were used, and then only at baseline. French centres used the Structured Clinical Interview for *DSM-IV* (SCID) [54] to reach a diagnosis.

Positive and Negative Syndrome Scale (PANSS) The PANSS [28, 29] comprises 30 items, each rated as a 7-point scale of severity. There are detailed instructions for conducting the clinical interview on which the ratings are based, and a glossary of individual items [30]. Seven items provide an overall positive syndrome score, seven a negative syndrome score, and 16 a general measure of psychopathology. Inter-rater reliability was reported as adequate or good [11, 41]. The German centres also used the Brief Psychiatric Rating Scale (BPRS) [42] for purposes of comparison.

Calgary Depression Scale for Schizophrenia (CDSS) This questionnaire administered by the researcher has been designed specifically to measure depression in patients with schizophrenia [1, 2]. It is composed of nine questions, rated on a 4-point scale. A global score is obtained by adding the values obtained for each item. Its reliability and validity are good [2].

Clinical Global Impression (CGI) This gives a single overall rating of the degree of mental illness on a 7-point scale [22].

The Global Assessment of Functioning (GAF) As its title implies, this scale provides an overall evaluation of functioning for people with psychiatric disorders, with detailed descriptions acting as anchor points [3]. It deliberately conflates mental status and social function.

Global Assessment of Relational Functioning (GARF) This scale describes and quantifies the relational context within which patients live and problems occur [16, 21]. It rates the degree to which the family (defined broadly) meets the affective and instrumental needs of its members in the areas of joint problem solving, organisation and emotional climate. Its reliability and validity have been established [16].

Medical Outcome Study Short Form 36 (SF36) This global measure of outcome shows good internal consistency and validity [19], and community norms are available [25].

The Social and Occupational Functioning Assessment Scale (SOFAS) The SOFAS was developed from the GAF. Unlike the latter, it focuses entirely on the individual's level of social and occupational functioning without consideration of the level of mental disturbance. It does, however, take account of the impairment caused by physical medical conditions [20].

Quality of Life Interview (QoLI) Also known as the Lehman Scale [36], this structured questionnaire concentrates on the social dimension of the quality of life in great detail, in both subjective and objective terms. It also measures perceived health but excludes other dimensions often included in quality of life indicators.

EuroQoL This is a self-assessment questionnaire measuring five dimensions of the quality of life: mobility, personal care, routine occupations, pain and discomfort, anxiety and depression. The reliability and validity of the scale appear to be good [12, 24, 57].

Economic Assessment Information about the use of services was collected using the standardised Client Service Receipt Interview (CSRI) [10] and the Malin System. The CSRI was used to collect information on service use every 3 months retrospectively from patients' key workers. It covers hospital-based services, day-centre activities, appointments at the GP surgery, leisure activities, and professional support for services provided for the client at home. For each service, information is collected on the type of service, frequency of attendance, duration of attendance, mode of travel to and from the service, and any charges made to the service. Details are also asked about the time spent by the principal informal carer on both direct and indirect care activities.

The Malin system was developed in France and its philosophy is very close to that of the CSRI. However, it also records information on the *type* of intervention provided to the patient. A questionnaire was constructed for use in the French centres to cover the requirements of both CSRI and Malin.

The Rating of Medication Influences (ROMI) Scale The ROMI was used to evaluate adherence [60]. It is a reliable and valid standardised measure for the assessment of attitudinal and behavioural factors influencing patients' adherence to neuroleptic treatment [60]. It assesses the patients' own reasons for medication adherence and non-adherence.

The Abnormal Involuntary Movement Scale (AIMS) The AIMS [44] includes seven items, each relating to the severity of abnormal movement in different anatomical areas. Reliability of the scale seems to be good [34, 56].

The Extrapyramidal Rating Scale This scale of Simpson and Angus [51] has good reliability and validity. It contains ten items that provide an overall score.

Table 2 Clinical characteristics of samples

	France (N=288)	Germany (N=618)	United Kingdom (N=302)	All (N=1208)	P
Time since first contact (years), mean (SD)	14.3 (9.9)	14.5 (9.9)	14.2 (10.6)	14.4 (10.1)	
Schizophrenia subtype					
Disorganised	19 (6.6)	38 (6.1)	15 (5.0)	72 (6.0)	≤0.0001
Catatonic	2 (0.7)	11 (1.8)	4 (1.3)	17 (1.4)	
Paranoid	179 (62.2)	480 (77.7)	228 (75.5)	887 (73.4)	
Undifferentiated	56 (19.4)	23 (3.7)	28 (9.3)	107 (8.9)	
Residual	30 (10.4)	64 (10.4)	16 (5.3)	110 (9.1)	
Classification of longitudinal course					
Episodic with residual symptoms	125 (43.4)	315 (51.0)	61 (20.2)	450 (41.5)	<0.0001
Episodic with no residual symptoms	31 (10.8)	154 (24.9)	50 (16.6)	235 (19.5)	
continuous	108 (37.5)	77 (12.5)	119 (39.4)	304 (25.2)	
Single episode in partial remission	6 (2.1)	25 (4.0)	14 (4.6)	45 (3.7)	
Single episode in full remission	2 (0.7)	14 (2.3)	30 (9.9)	46 (3.8)	
Other or unspecified pattern	16 (5.6)	10 (1.6)	27 (8.9)	53 (4.4)	
With prominent negative symptoms	95 (33.0)	213 (34.5)	87 (28.8)	393 (32.7)	0.21
Admitted to a psychiatric ward	284 (98.6)	573 (92.7)	284 (94.0)	1141 (94.5)	
Episode of physical violence	107 (37.2)	103 (16.7)	105 (34.8)	315 (26.1)	
Committed a sexual offence	11 (3.8)	17 (2.8)	8 (2.3)	36 (3.0)	
Suicide or self-harm attempt	104 (36.1)	215 (34.8)	145 (48.6)	464 (38.4)	

Values in parentheses are percentages except as otherwise indicated

The Barnes Akathisia Scale (BAS) The BAS [4] provides explicit criteria for pseudoakathisia, and mild, moderate and severe akathisia. Inter-rater reliability appears to be very good [4].

The Acute Version of the MRC Needs for Care Assessment (NFCAS-A) This attempts to standardise expert judgements of individuals' specific treatment needs by collecting detailed information about their mental state and social disabilities, recording the treatment actually being given to them, and relating this information to a pre-established list of potentially effective interventions, using an explicit algorithm [7]. It is possible then to arrive at a statement of the extent to which the participants' needs are met. The acute version was developed to accommodate the service response to people in continuing care in the community. It incorporates a global judgement of the clinical significance of unmet need (clearly, some needs may be unmet but have relatively little impact on the overall outcome of treatment). Ratings are made using a panel technique. Research workers present details of the case to senior clinicians who make judgements about the extent to which needs for care are being met.

Camberwell Assessment of Need (CAN) The German centres opted to use the research version of the CAN [43]. This instrument provides separate assessments of the health and social needs of clients by clinicians and by the clients themselves. It is clear that clinician and user ratings of need differ [52]. It has good reliability and validity [43] and has been used extensively [53].

Involvement Evaluation Questionnaire (IEQ) This instrument was developed in the Netherlands initially to study the relative impact of day and in-patient hospitalization on informal carers [48, 49]. It covers the month before assessment. It may be self-administered, and includes a distress scale and a separate section on child care. Psychometric properties are well established and factor analysis yields four factors of 'tension', 'worrying', 'supervision' and 'urging'.

The European Service Mapping Schedule (ESMS) The ESMS allows the compilation of an inventory of the mental health services for the adult mentally ill population of a particular catchment area, with descriptions of their major characteristics [26]. Provisions by health service, social services, voluntary and private sectors are included.

Establishing consistency of use between centres was difficult and was assisted by meetings of the research workers from the different countries. Some of the instruments needed to be translated into German. This was done after the lengthy procedures of back-translation recommended by the WHO [47].

■ Procedure

Once the list of participants was drawn up, individuals were contacted sequentially and asked for their consent to the study. After consent was obtained, they were interviewed and the initial battery of assessments was completed. The initial and final assessments took around 3 h, the intervening assessments somewhat less. Assessments took place in a venue convenient to the patient, either at home or in a clinical facility. They sometimes required more than one session. Respondents' permission for follow-up interviews was sought, and these were then done at 6-monthly intervals for the 2 years required by the project.

Results

The clinical attributes of the disorder are shown in Table 2. The participants as a whole had suffered from schizophrenia for a considerable period, more than 14 years in each of the countries. As might be expected,

Table 3 PANSS and CDSS (mean scores with standard deviation)

	France (N=287)	Germany (N=619)	UK (N=302)	All (N=1208)	P
Total PANSS score	71.0 (21.3)	55.7 (19.8)	48.1 (15.7)	57.4 (20.9)	<0.0001
Positive subscale score	14.7 (5.6)	11.8 (5.2)	11.5 (5.7)	12.4 (5.6)	<0.001
Negative subscale score	20.0 (8.0)	15.5 (7.2)	12.4 (6.2)	15.8 (7.7)	<0.0001
General Psychopathology subscale score	36.3 (11.3)	28.5 (10.0)	24.3 (7.4)	29.3 (10.6)	<0.0001
Total CDSS Depression Score	3.58 (4.1)	2.77 (3.3)	2.35 (3.4)	3.05 (3.9)	<0.001

Fig. 1 Clinical Global Impression (CGI)
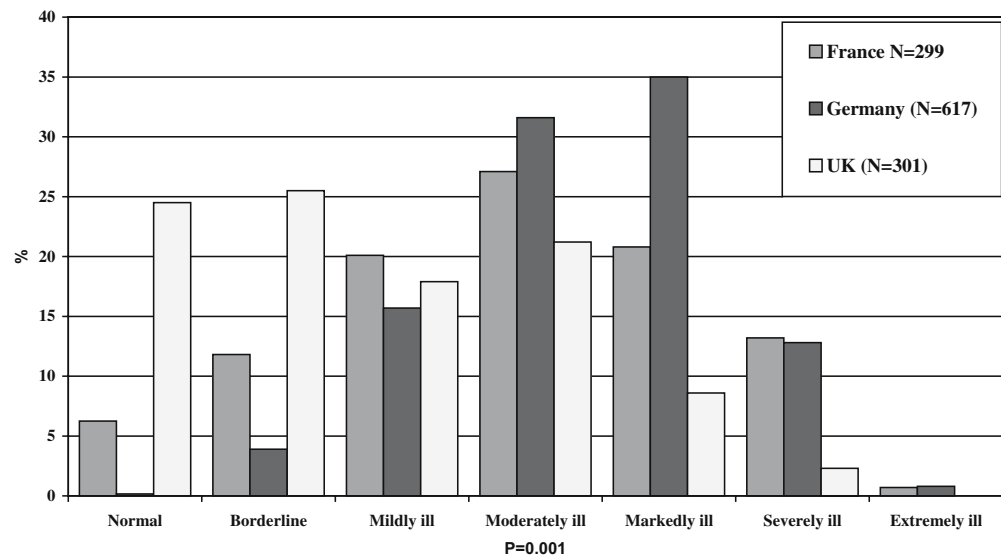
virtually all had been admitted to hospital. The majority of cases were of the paranoid subtype of schizophrenia. This diagnosis applied to three quarters of all cases in Germany and the UK, although in France it accounted for only just over 60%. The diagnosis of undifferentiated schizophrenia may have been used in France for the sorts of cases in which that of paranoid schizophrenia was used in the other countries. Episodic disorders were commoner in Germany, and continuous illness in France and the UK. However, there were many more cases of single episodes in full remission in the UK sample. Around a third of all cases in each of the countries had prominent negative symptoms. Many had been involved in episodes of physical violence, although this was less marked in the German sample. Over a third had made an attempt at suicide or self-harm, and in the UK sample this rose to nearly a half. Very few had committed sexual offences.

In Table 3, information from the PANSS and the CDSS is shown. There is a clear tendency for the French participants to score higher on the PANSS. This was true of all the sub-scales, but most marked for the general psychopathology sub-scale. The increased level of symptoms in the French sample was corroborated by the mean CDSS score.

In Fig. 1, we display the ratings for the Clinical Global Impression. On this measure, the UK sample appears to be skewed towards lesser degrees of illness. There is an excess of German participants in the markedly ill category.

Movement disorders were uncommon in our sample (Table 4). The scores on the Simpson and Angus scale were only a little over the upper limit of normal, only 30 participants were rated above 'mild' on tardive dyskinesia, and only 27 above 'mild' on akithisia. There are inconsistencies between the countries in the prevalence of extrapyramidal symptoms that are difficult to interpret. Whereas relatively few of the French participants had no abnormal movements, the samples from the other two nations were skewed towards moderate and severe ratings. On the other hand, on the Barnes Akathisia Scale, only the British sample seemed to in-

Table 4 Extrapyramidal symptoms

	France (N=288)	Germany (N=618)	United Kingdom (N=302)	All (N=1208)	P
AIMS (severity of abnormal movements)					
None	191 (66.6)	504 (81.6)	241 (79.8)	936 (75.5)	<0.001
Minimal	63 (22.0)	55 (8.9)	25 (8.3)	143 (11.8)	
Mild	26 (9.1)	39 (6.3)	24 (7.9)	89 (7.4)	
Moderate	3 (1.0)	12 (1.9)	11 (3.6)	26 (2.2)	
Severe	2 (0.7)	2 (0.3)	0 (0.0)	4 (0.3)	
BAS (global assessment)					
Absent	219 (76.3)	492 (79.6)	233 (77.2)	944 (78.2)	0.03
Questionable	50 (17.4)	84 (13.6)	34 (11.3)	168 (13.9)	
Mild	13 (4.5)	24 (3.9)	22 (7.3)	59 (4.9)	
Moderate	3 (1.0)	10 (1.6)	8 (2.6)	21 (1.7)	
Marked	0 (0.0)	3 (0.5)	3 (1.0)	6 (0.5)	
SAS extrapyramidal score, mean (SD)	0.38 (0.4)	0.45 (1.1)	0.18 (0.3)	0.36 (0.8)	<0.0001

Values in parentheses are percentages except as otherwise indicated

Table 5 Overall functioning and quality of life (mean scores and standard deviation)

	France (N=288)	Germany (N=618)	United Kingdom (N=302)	All (N=1208)	P
GAF	51.4 (14.8)	50.0 (16.2)	54.0 (16.5)	51.3 (16.0)	0.0015
GARF	52.4 (17.4)	59.9 (20.3)	62.6 (22.2)	58.7 (20.5)	0.0001
SOFAS	51.2 (14.5)	50.6 (16.1)	54.9 (16.9)	51.8 (16.0)	0.0005
EuroQoL	0.72 (0.28)	0.73 (0.27)	0.75 (0.29)	0.73 (0.28)	0.41

clude more participants rated as having definite symptoms. Finally, on the Simpson and Angus scale, the German and French samples had the higher scores.

Table 5 displays the overall functioning and quality of life of the participants. There were few differences in the GAF score, whereas on the GARF the French sample appeared to function less well. The functioning of the British sample was rated higher (i.e. more normal) on the SOFAS score. Finally, on quality of life, there was very little difference between the respondents in the different countries.

The socio-demographic characteristics of the participants are shown in Table 6. Comparatively more in the French sample were male, at 69%. The mean age of the national samples was largely similar, around 40 years. More in the French sample were single. Nearly 20% of the German sample were married, compared with only 8% of the French. Divorce and separation were almost twice as common in the German participants as in the French. Similar numbers of respondents were living alone (around a third). More of the Germans were living in nuclear families (i.e. with a partner or with children) compared to the other two national groups. Nearly twice as many in the French sample were living with their parents or other relatives compared with the German and UK groups.

The most striking difference between the patients in the three countries is in their experience of social outcomes characterised by exclusion, in particular unemployment, homelessness, rooflessness and imprisonment. Only one person in five was in employment, although the employment rates were considerably higher in Germany. Only 5% of employed respondents were in sheltered or voluntary employment in the UK, whereas in Germany and in France, 38 and 18%, respectively, of all employment was of this type. This is explored further by Marwaha et al. [38].

Although very few participants were homeless at the point of induction, many had been homeless in the past, and quite a few had been roofless. This was far more marked in the UK sample than in the German or French samples: nearly a third of the UK sample had been homeless at some stage, despite the relatively well developed community-based services there. Likewise, the number of British respondents who had been to prison was virtually twice that in the other countries, at 14%. Whereas a history of homelessness was particularly characteristic of the London sample (43 vs 22% in Leicestershire), the experience of imprisonment and rooflessness were surprisingly similar in London and Leicestershire (imprisonment, 16 and 13%, respectively; rooflessness, 13% in each).

Table 6 Sociodemographic characteristics of samples

	France (N=288)	Germany (N=618)	United Kingdom (N=302)	All (N=1208)	P
Sex, male	200 (69.4)	348 (56.3)	195 (64.6)	743 (61.5)	0.0005
Age, mean (SD)	39.5 (10.3)	41.5 (11.0)	40.7 (11.7)	40.8 (11.1)	0.05
Family situation					
Single	206 (71.5)	335 (54.2)	203 (67.2)	744 (61.6)	0.0001
Married	24 (8.3)	117 (18.9)	40 (13.2)	181 (15.0)	
Living as a couple	20 (6.9)	40 (6.5)	13 (4.3)	73 (6.0)	
Divorced/separated	33 (11.5)	119 (19.3)	43 (14.2)	195 (16.1)	
Widowed	4 (1.4)	7 (1.1)	3 (1.0)	14 (1.2)	
Living conditions					
Living alone	103 (35.8)	205 (33.2)	109 (36.1)	417 (34.5)	0.0001
Nuclear family	47 (16.3)	170 (27.5)	51 (16.9)	268 (22.2)	
Living with parents or other relatives	113 (39.3)	108 (17.5)	73 (24.2)	294 (24.4)	
Group accommodation	17 (5.9)	84 (13.6)	40 (13.2)	141 (11.7)	
Other	7 (2.4)	51 (8.3)	29 (9.6)	87 (7.2)	
In employment (including sheltered)	39 (12.9)	187 (30.3)	33 (11.5)	259 (21.4)	0.0001
Admitted to a psychiatric ward	284 (98.6)	573 (92.7)	284 (94.0)	1141 (94.5)	
Episode of physical violence	107 (37.2)	103 (16.7)	105 (34.8)	315 (26.1)	
Committed a sexual offence	11 (3.8)	17 (2.8)	8 (2.3)	36 (3.0)	
Suicide or self-harm attempt	104 (36.1)	215 (34.8)	145 (48.6)	464 (38.4)	
Been homeless	27 (9.4)	52 (8.4)	99 (32.8)	178 (14.7)	
Been roofless	16 (5.6)	21 (3.4)	40 (13.2)	77 (6.4)	
Been to prison	23 (8.0)	43 (7.1)	44 (14.6)	110 (9.1)	

Values in parentheses are percentages except as otherwise indicated

Differences in the social and clinical characteristics of the patients might explain this finding. For this reason, we performed three logistic regression analyses with homelessness, rooflessness and a history of imprisonment as the dependent variable, and entering 'country' together with clinical and social variables as independent variables. After controlling for the baseline differences in samples in this way, there was still a major and statistically significant effect of country. Using Britain as the reference country, the adjusted odds ratio for having been homeless in France was 0.12, whereas in Germany it was 0.13 ($p<0.0001$ in both cases). For rooflessness, the corresponding figures for France and Germany were 0.24 ($p=0.05$) and 0.21 ($p=0.002$). Finally, for imprisonment the figures were 0.3 ($p=0.004$) and 0.47 ($p=0.51$).

Discussion

The potential of multinational studies of schizophrenia has been recognised since the US/UK study [15] and the International Pilot Study of Schizophrenia [62]. More recently, papers have been published from the European multinational EPSILON study on needs for treatment, the economics of treatment, quality of life, level of family care giving and general satisfaction with care [14, 18, 40, 45, 55, 58].

The European Schizophrenia Cohort (EuroSC) involves the follow up of a large sample of people suffering from schizophrenia in three European countries. Although it covers some of the same ground as EPSILON, the latter included only a single centre per country (none in France or Germany), and did not include the prospective element so central to EuroSC. The prospective investigation of associations between costs, treatment and outcomes promises to be both novel and powerful.

Because of variations in service patterns, EuroSC permits a naturalistic study of the impact of services on outcome. It will allow us to test hypotheses concerning the factors that influence course (including medication, adherence and the provision of non-pharmacological treatments) and of the costs associated with routine care. It will also allow an estimate of the overall burden of the disorder in terms of severity and persistence of symptoms and disability.

This paper presents only cross-sectional data, in addition to a description of methods applied in the study. Because of specific local interests and variation in resource, the methods varied somewhat from site to site and sampling may have been affected by the differences in the thresholds for, and the services systems in, secondary care. This means that the relatively small differences between the national samples will need controlling for, although some future analyses will have to be restricted to individual countries.

The differences between the sites may arise from several sources, including the requirement for differing sampling strategies and the possibility of systematic variation in the use of instruments between sites. Only the London sample included some people who were no longer in contact with secondary services, and the reduced mean severity levels from this site may reflect this. The London sampling strategy accounts for the increased proportion in the UK of people in full remission after a single episode (10%).

In terms of the subtypes of schizophrenia, three quarters of the total sample were designated as suffering from paranoid schizophrenia. However, this was considerably lower in the French sample. Although it is possible that undifferentiated schizophrenia was used in France to cover cases that would be referred to as paranoid in Britain and Germany, the subtyping of schizophrenia was derived algorithmically from *DSM-IV* criteria, and this would tend to reduce systematic biases between sites. Around one third of all cases had prominent negative symptoms, with little variation between sites.

The overall sample was characterised by long-term illness: respondents had been ill for over 14 years in all sites, and virtually all had been psychiatric in-patients at some point in their lives. The similarities in these respects suggest that our procedures gathered similar samples in terms of illness characteristics in the different sites. Other aspects of our patients' psychiatric careers did vary by site. The German patients were less likely to have been involved in episodes of violence. It is especially striking that the UK group, who on many measures appeared less ill, were the most prone to violence. The wide variations in violence, if genuine, support the importance of social context rather than the fact and characteristics of mental illness [17, 59].

The French sample appeared to have most in the way of current psychopathology. They scored highest by an appreciable margin on all sub-scales of the PANSS and on depressive symptoms as assessed by the CDSS.

Hearteningly, the study patients had relatively little in the way of extrapyramidal side effects from medication. This may reflect changing practice in the dosages of neuroleptics, and the introduction of the new atypical drugs. On the AIMS, more than 90% were rated as having limited or no symptoms, with similar results for the Barnes Akithisia Scale. The average scores on the SAS were only slightly above the limit for the normal range.

Overall functional level was quite good, a pointed finding when set against the poor access to occupation of people with schizophrenia [37]. There was little variation between the German and British samples, despite the differences in employment status [38]. However, there was a hint of poorer functioning in the French sample. Quality of life hardly varied at all between sites.

To summarise, the French sample contained more males who were more likely to be living with their family of origin, had more symptoms and perhaps

poorer functioning. The German sample was more likely to have been functioning within a cohabitating relationship. The British sample included more people with single episodes, and participants were not particularly symptomatic.

Although the mean age of the samples was closely similar, there were variations in the proportion of males. In all centres, this exceeded 50%, as would have been predicted from the existing literature. However, in France it rose to 70%. Family situation and living arrangements can be used as a reflection of social isolation. The German sample was relatively stable, with a quarter being married or living as a couple. It also contained the largest group of divorced or separated participants, whereas many more of the French and UK samples had never married. The French sample showed much the highest proportion living with parents or other relatives, and lower rates of group accommodation than the other two samples. The differences in the French sample were partly due to the high preponderance of males. Very few of the sample (around one fifth) were in employment. Overall, these sociodemographic characteristics emphasise the disadvantage imposed by a diagnosis of schizophrenia.

Despite their relatively benign clinical profile, the British patients had experienced more social exclusion. In particular, they were characterised by a more frequent experience of homelessness, rooflessness, and imprisonment. They had also made more suicide attempts. This is despite the relatively well developed community-based psychiatric services in the areas sampled in the UK, and it remained after we had controlled for the moderate differences in social and clinical characteristics between the samples from the three countries. This is worrying, particularly if it is an unintended consequence of the form of service provision in the UK. However, it is equally likely to arise from general societal differences. At the end of the 20th century, Britain was a more divided society than France or Germany, with greater income inequality and less good social provision (Euro–stat: http://www.epp.eurostat.cec.eu.int/). Its per capita prison population is the highest in the European Union, and this may explain the strong history of imprisonment in our British sample, given that they seem to be no more violent than the French participants. People with severe mental illness cope less well with pressures leading to social exclusion: they will be less susceptible to exclusion in jurisdictions where societal structures offer more effective security.

The EuroSC Research Group is composed of the following:

Altenburg: I. Lindenbach, M. Swiridoff
Eppingen: F. Baehr, G. Lauer, T. Schwarz
Hemer: V. Becker, J. Höffler, K. Siegrist, U. Trenckmann
Leicester: T. Brugha, J. Smith, D. Bagchi, S. McCormack, S. Wheatley
Leipzig: M. Angermeyer, S. Bernert, R. Kilian, H. Matschinger, C. Mory, Ch. Roick
Lille: M. Goudemand, D. Beaune, S. Dumont
London: P. Bebbington, D. Ellis, L. Isham, S. Johnson, J. Pearson, E. Perez, A. Regan, R. White
Lyon: B. Lachaux, P. Pasi-Delay, S. Declerck
Marseille: J.M. Azorin, J.P. Chabannes, P. Chiaroni, I. Banovic
Lundbeck A/S: M. Toumi, Å. Kornfeld, K. Hansen, C. Morin, L. Munier, J.C. Nachef, C. Nickel, C. Sapin, V. Willacy

References

1. Addington D, Addington J, Schissel B (1990) A depression rating scale for schizophrenics. Schizophr Res 3:247–251
2. Addington D, Addington J, Maticka-Tyndale E, Joyce J (1992) Reliability and validity of a depression rating scale for schizophrenia. Schizophr Res 6:201–208
3. American Psychiatric Association (1994) Diagnostic and statistical manual of mental disorders, 4th edn, revised. American Psychiatric Association, Washington, DC
4. Barnes TR (1989) A rating scale for drug-induced akathisia. Br J Psychiatry 154:276–672
5. Bauer M, Kunze H, von Cranach M, Fritze J, Becker T (2001) Psychiatric reform in Germany. Acta Psychiatr Scand 104 (Suppl 401):27–39
6. Bebbington PE, Marsden L, Brewin CR (1997) The need for psychiatric treatment in the general population: the Camberwell Needs for Care Survey. Psychol Med 27:821–834
7. Bebbington PE, Brugha TS, Hill T, Marsden L, Window S (1999) A validation of the Health of the Nation Outcome Scales (HoNOS). Br J Psychiatry 174:389–394
8. Bebbington P, Brugha T, Jenkins R, Lewis G, Farrell M, Meltzer H (2000) Neurotic disorders and the use of services: a report from the National Survey of Psychiatric Morbidity. Psychol Med 30:1369–1376
9. Bebbington PE, Kuipers L (2003) Schizophrenia and psychosocial stresses. In: Hirsch SR, Weinberger D (eds) Schizophrenia. Blackwell, Oxford, pp 611–634
10. Beecham J, Knapp M (1992) Costing psychiatric interventions. In: Thornicroft G, Brewin CR, Wing JK (eds) Measuring mental health needs. Gaskell, London
11. Bell M, Milstein R, Beam-Goulet J, Lysaker P, Cicchetti D (1992) The posItive and Negative Syndrome Scale and the Brief Psychiatric Rating Scale. J Nerv Mental Disord 180:723–728
12. Brazier J, Jones N, Kind P (1993) Testing the validity of the EuroQol and comparing it with the SF-36 health survey questionnaire. Q Life Res 2:169–180
13. Burns T, Fiander M, Kent A, Ukoumunne OC, Byford S, Fahy T, Kumar KR (2000) Effects of case-load size on the process of care of patients with severe psychotic illness. Report from the UK700 trial. Br J Psychiatry 177:427–433

14. Chisholm D, Knapp M (2002) The economics of schizophrenia care in Europe: the EPSILON study. Epidemiol Psychiatr Soc 11:12–17
15. Cooper JE, Kendell RE, Gurland BJ, Sharpe L, Copeland JRM, Simon R (1972) Psychiatric diagnosis in New York and London. Maudsley Monograph No. 20. Oxford University Press, London
16. Dausch BM, Miklowitz DJ, Richards JA (1996) Global Assessment of Relational Functioning Scale (GARF): II. Reliability and validity in a sample of families of bipolar patients. Fam Proc 35:175–189
17. Draine J, Salzer MS, Culhane DP, Hadley TR (2002) Role of social disadvantage in crime, joblessness, and homelessness among persons with serious mental illness. Psychiatr Serv 53:565–573
18. Gaite L, Vazquez-Barquero JL, Borra C, Ballesteros J, Schene A, Welcher B, Thornicroft G, Becker T, Ruggeri M, Herran A, Koeter M, Meijer K, Monden M, Sijsenaar M, Van-Wijngaarden B, Knudsen HC, Larsen A, Martiny K, Schou C, Beecham J, Brooks L, Chisholm D, Griffiths G, Grove J, Knapp M, Leese M, McCrone P, Padfield S, White IR, Arrizabalaga AA, Castanedo SH, Retuerto MP, Bourgon EV, Amaddeo F, Bisoffi G, Cristofalo D, Dall'Agnola R, Lasalvia A, Tansella M (2002) Quality of life in patients with schizophrenia in five European countries: the EPSILON study. Acta Psychiatr Scand 105:283–292
19. Garratt AM, Ruta DA, Abdalla ME, Buckingham JK, Russell IT (1993) The SF36 health survey questionnaire: an outcome measure suitable for routine use within the NHS? Br Med J 306:1440–1444
20. Goldman HH, Skodol AE, Lave TR (1992) Revising AXIS V for DSM-IV: a review of measures of social functioning. Am J Psychiatr 149:1148–1156
21. Group for the Advancement of Psychiatry Committee on the Family (1996) Global Assessment of Relational Functioning Scale (GARF): I. Background and rationale. Group for the Advancement of Psychiatry Committee on the Family. Fam Proc 35:155–172
22. Guy W (1976) ECDEV Assessment manual for psychopharmacology. Revised DHEW Pub (AOM). National Institute for Mental Health, Rockville MD
23. Harding CM, Hall GM (1997) Long-term outcome studies of schizophrenia: do females continue to display better outcome as expected. Int Rev Psychiatry 9:409–418
24. Hurst NP, Jobanputra P, Hunter M, Lambert M, Lochhead A, Brown H (1994) Validity of EuroQol—a generic health status instrument—in patients with rheumatoid arthritis. Economic and Health Outcomes Research Group. Br J Rheumatol 33:655–662
25. Jenkinson C, Coulter A, Wright L (1993) Short form 36 (SF36) health survey questionnaire: normative data for adults of working age. Br Med J 306:1437–1440
26. Johnson S, Kuhlmann R, EPCAT Group (2000) The European Service Mapping Schedule (ESMS): development of an instrument for the description and classification of mental health services. Acta Psychiatr Scand 102(Suppl 405):14–23
27. Johnson S, Zinkler M, Priebe S (2001) Mental health service provision in England. Acta Psychiatr Scand 104(Suppl 410):47–55
28. Kay SR, Opler LA, Lindenmayer JP (1987) The Positive and Negative Syndromes Scale (PANSS) for schizophrenia. Schizophr Bull 13:261–276
29. Kay SR, Opler LA, Lindenmayer JP (1989) The Positive and Negative Syndrome Scale (PANSS): rationale and standardisation. Br J Psychiatry 155:59–65
30. Kay SR (1991) Positive and negative syndromes in schizophrenia. Brunner/Mazel, New York
31. Knapp M (1997) Costs of schizophrenia (review). Br J Psychiatry 171:509–518
32. Knapp M, Chisholm D, Leese M, Amaddeo F, Tansella M, Schene A, Thornicroft G, Vazquez-Barquero JL, Knudsen HC, Becker T (2002) EPSILON. European psychiatric services: inputs linked to outcome domains and needs: comparing patterns and costs of schizophrenia care in five European countries: the EPSILON study. European psychiatric services: inputs linked to outcome domains and needs. Acta Psychiatr Scand 105:42–54
33. Kovess V, Boisguerin B, Antoine D, Reynauld M (1995) Has the sectorization of psychiatric services in France really been effective? Soc Psychiatry Psychiatr Epidemiol 30:132–138
34. Lane RD, Glazer WM, Hansen TE, Berman WH, Kramer SI (1985) Assessment of tardive dyskinesia using the abnormal involuntary movement scale. J Nerv Ment Dis 173:353–357
35. Lang FH, Forbes JF, Murray GD, Johnstone EC (1997) Service provision for people with schizophrenia. I. Clinical and economic perspective. Br J Psychiatry 171:159–164
36. Lehman AF (1983) The effects of psychiatric symptoms on quality of life assessments among the chronic mentally ill. Eval Program Plann 6:143–151
37. Marwaha S, Johnson S (2004) Schizophrenia and employment. A review. Soc Psychiatry Psychiatr Epidemiol 39:337–349
38. Marwaha S, Johnson S, Bebbington P, Angermeyer M, Brugha T, Azorin J-M, Killian R, Hansen K, Toumi M (2005) Characteristics and correlates of employment in people with schizophrenia. Findings from the international EuroSC study. Br J Psychiatry (in press)
39. Mason P, Harrison G, Glazebrook C, Medley I, Croudace T (1996) The course of schizophrenia over 13 years. A report from the International Study on Schizophrenia (ISoS) coordinated by the World Health Organization. Br J Psychiatry 169:580–586
40. McCrone P, Leese M, Thornicroft G, Schene A, Knudsen HC, Vazquez-Barquero JL, Tansella M, Becker T, Chisholm D (2001) A comparison of needs of patients with schizophrenia in five European countries: the EPSILON study. Acta Psychiatr Scand 103:370–379
41. Norman RMG, Malla AK, Cortese L, Diaz F (1996) A study of the interrelationship between and comparative interrater reliability of the SAPS, SANS and PANSS. Schizophr Res 19:73–85
42. Overall JE, Gorham DR (1962) Brief Psychiatric Rating Scale. Psychol Rep 10:799–812
43. Phelan M, Slade M, Thornicroft G, Dunn G, Holloway F, Wykes T, Strathdee G, Loftus L, McCrone P, Hayward P (1995) The Camberwell Assessment of Need (CAN). The validity and reliability of an instrument to assess the needs of people with severe mental illness. Br J Psychiatry 167:589–595
44. Psychopharmacology Research Branch NIMH (1976) Abnormal Involuntary Movement Scale (AIMS). In: Guy W (ed) Assessment manual for psychopharmacology (revised). NIMH, Rockville, MD, pp 534–537
45. Ruggeri M, Lasalvia A, Bisoffi G, Thornicroft G, Gazquez-Barquero JL, Becker T, Knapp M, Knudsen HC, Schene A, Tansella M (2003) Satisfaction with mental health services among people with schizophrenia in five European sites: results from the EPSILON study. Schizophr Bull 29:229–245
46. Salvador-Carulla L, Haro JM, Cabases J, Madoz V, Sacristan JA, Vazquez-Barquero JL (1999) Service utilization and costs of first-onset schizophrenia in two widely differing health service areas in North-East Spain. PSICOST Group. Acta Psychiatr Scand 100:335–343
47. Sartorius N, Kuyken W (1994) Translation of health status instruments. In: Orley J, Kuyken W (eds) Quality of life assessment: international perspectives. Springer, Berlin Heidelberg New York, pp 2–18
48. Schene AH (1990) Objective and subjective dimensions of family burden. Towards an integrative framework for research. Soc Psychiatry Psychiatr Epidemiol 25:289–297

49. Schene AH, Wijngaarden B (1992) The involvement evaluation questionnaire. Department of Psychiatry, University of Amsterdam, Amsterdam
50. Schwarz D, Lellouch J (1967) Explanatory and prognostic attitudes in therapeutic trials. J Chronic Dis 20:637–648
51. Simpson S, Angus R (1970) A rating scale for extrapyramidal side effects. Acta Psychiatr Scand Suppl. 212:11–19
52. Slade M, Phelan M, Thornicroft G (1998) A comparison of needs assessed by staff and an epidemiologically representative sample of patients with psychosis. Psychol Med 28:543–550
53. Slade M, Loftus L, Phelan M, Thornicroft G, Wykes T (1999) The Camberwell assessment of need. Gaskell, London
54. Spitzer RL, Williams JB, Gibbon M, First MB (1992) The Structured Clinical Interview for DSM-III-R (SCID). I: rationale, and description. Arch Gen Psychiatry 49:624–629
55. Thornicroft G, Tansella M, Becker T, Knapp M, Leese M, Schene A, Vazquez-Barquero JL (2004) The personal impact of schizophrenia in Europe. Schizophr Res 69:125–132
56. Tracy K, Adler LA, Rotrosen J, Edson R, Lavori P (1997). Inter-rater reliability issues in multicentre trials. Part I: theoretical concepts and operational procedures used in Department of Veterans Affairs Cooperative Study #394. Psychopharmacol Bull 33:53–57
57. van Agt HM, Essink-Bot ML, Krabbe PF, Bonsel GJ (1994) Test–retest reliability of health state valuations collected with the EuroQol questionnaire. Soc Sci Med 39:1437–1444
58. Van-Wijngaarden B, Schene A, Koeter M, Becker T, Knapp M, Knudsen HC, Tansella M, Thornicroft G, Vazquez-Barquero JL, Lasalvia A, Leese M (2003) People with schizophrenia in five countries: conceptual similarities and intercultural differences in family caregiving. Schizophr Bull 39:573–586
59. Walsh E, Buchanan A (2003) Criminal and violent behaviour in schizophrenia. In: Murray R, Jones P, Susser E, van Os J, Cannon M (eds) The epidemiology of schizophrenia. CUP, Cambridge
60. Weiden P, Rapkin B, Mott T, Zygmunt A, Goldman D, Horvitz-Lennon M, Frances A (1994) Rating of Medication Influences (ROMI) scale in schizophrenia. Schizophr Bull 20:297–310
61. Wing JK, Babor T, Brugha T, Burke J, Cooper JE, Giel R, Jablensky A, Regier R, Sartorius N (1990) SCAN: Schedules for Clinical Assessment in Neuropsychiatry. Arch Gen Psychiatry 47:589–593
62. World Health Organization (1973) The international pilot study of schizophrenia. WHO, Geneva
63. World Health Organization (1992). SCAN: Schedules for Clinical Assessment in Neuropsychiatry. WHO, Geneva