Original article

Association of treatment delay, migration and urbanicity in psychosis

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ABSTRACT

Background. – Several factors may contribute to duration of untreated psychosis (DUP): patient-delay, referral-delay and treatment-delay caused by mental health care services (MHS-delay). In order to find the most effective interventions to reduce DUP, it is important to know what factors in these pathways to care contribute to DUP.
Aim. – To examine the relationship of the constituents of treatment delay, migration status and urbanicity.
Method. – In first episode psychotic patients ($n = 182$) from rural, urban and highly urbanized areas, DUP, migration status and pathways to care were determined.
Results. – Mean DUP was 53.6 weeks (median 8.9, SD = 116.8). Patient-delay was significantly longer for patients from highly urbanized areas and for first generation immigrants. MHS-delay was longer for patients who were treated already by MHS for other diagnoses.
Conclusions. – Specific interventions are needed focusing on patients living in highly urbanized areas and first generation immigrants in order to shorten patient delay. MHS should improve early detection of psychosis in patients already in treatment for other diagnosis.

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1. Introduction

The duration of untreated psychosis (DUP) is defined as the time from manifestation of the first psychotic symptoms to initiation of appropriate treatment [10]. Over the past 10 years, evidence accumulated on the association of shorter DUP and a better outcome on several measures [10,17,19]. Several demographical factors influencing DUP have been suggested earlier. DUP is repeatedly found to be shorter when there is an acute mode of onset of the illness [8,11,28] or when the patient is employed or studying when the illness emerges [11,16]. The literature is less consistent on the issue of active family involvement in help-seeking. Morgan et al. reported a shorter DUP whereas Compton et al. showed a longer duration [8,11]. Norman et al. reported the interesting finding that patients with an ongoing contact with professional caregivers before and during the onset of psychosis had longer delays from first service contact after onset to initiation of adequate treatment [18].

Brunet et al. define DUP as the sum of three components; the delay in help-seeking by the patient, the referral delay, e.g. by the general practitioner, and thirdly delay in recognition and treatment by mental health care services [6]. The main object of

the present study is to examine the various components of treatment delay in a representative sample of first episode psychotic patients in the Netherlands. Since migration status has been shown to be associated with longer patient delay and the various pathways to care might differ between rural and more urbanized areas, this study was designed to examine the relationship between DUP, migration status and urbanicity [2,13]. Understanding where in the pathways to care the delay occurs and who run the highest risk may help finding more effective interventions to reduce DUP.

2. Materials and methods

2.1. Subjects

The study was conducted in two mental health care services in the Netherlands each with an early intervention program for psychosis; geographically covering the province of Friesland and the city of Amsterdam. The basic organisation of mental health services in Amsterdam and Friesland is similar. Both areas have implemented early detection and intervention for psychosis and for patients with an at risk mental state for psychosis. Referral by a GP is the standard route for referral to MHS, although self-referral (mostly via emergency services) is possible in both areas. Inclusion took place from May 2008 through September 2009. Inclusion criteria were a DSM-IV diagnosis of a non-affective psychotic

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disorder, no appropriate treatment with antipsychotic medication so far and an age between 10 and 36 years. We excluded patients with a substance induced psychotic disorder or patients with a neurological or endocrine disorder possibly related to the psychosis.

The population in the catchment area amounted to 1.4 million. The province of Friesland is a mixed rural-urban area with about 645,000 inhabitants and a mean population density of 192/km^2 on January 1st 2009, of whom 25,000 (3.9%) where first generation immigrants and 28,000 (4.3%) second generation immigrants. The population at risk (10–36 years of age) in Friesland was 204,700 inhabitants. The city of Amsterdam is an highly urbanized area with a mean population density of 4493/km^2. Its number of inhabitants was 755,600 on January 1st 2009 of whom 214,000 (28.3%) were first generation and 160,000 (21.2%) were second generation immigrants. The population at risk was 299,600 inhabitants. The early intervention programs in both areas provide comprehensive treatment to patients suffering from a first episode psychosis, inpatient as well as outpatient care.

2.2. Measures

The assessment protocol included completion of a validated semi-structured interview to establish DSM-IV diagnosis shortly after intake, by means of the mini-Schedules for Clinical Assessment in Neuropsychiatry (SCAN) [15] or Comprehensive Assessment of Symptoms and History (CASH) [3]. Information regarding DUP was collected using the Dutch translation of the Nottingham Onset Schedule (NOS), with the same definitions as proposed by Singh et al. [23]. The NOS was developed to systematically determine the onset of prodromal and psychotic symptoms and the start of antipsychotic medication or intensive treatment. For all first contact patients with a psychotic disorder, the onset of the first psychotic episode, dates of first contact with primary health care, referral to MHS and initiation of appropriate antipsychotic treatment and intensive treatment were collected based on all available data sources; including a semi-structured personal interview with the patient and relatives, and information from medical files. If only a year was known, the first of July of that year was noted as a date, when only a month was known, the 15th of that month was noted. In addition to this, data on date of birth, age at onset of psychosis, postal code, and nativity were collected. The definition of the different components of DUP – patient delay, referral delay and delay within MHS – are specified in Table 1. To determine nativity, we used the classification of the Netherlands' Bureau of Statistics (https://statline.cbs.nl). If a patient or one of his or her parents was born in another country, then the patient was

assigned to the nativity group that fitted that foreign country. In case of parents born in different countries, the country of birth of the mother was used. When a patient and at least one of his or her parents were born in another country, then the patient was classified as a first generation immigrant. If a patient was born in the Netherlands but at least one of his or her parents was born in another country, the patient was classified as a second-generation immigrant. This definition of nativity implies that the "native-born" group includes third generation immigrants (i.e. those with parents born in The Netherlands but grandparents not). With respect to urbanicity, we divided our study population in three subgroups. Patients were assigned to highly urban area when they lived in the city of Amsterdam ($>$ 750,000 inhabitants), patients where assigned to an urban area when they lived in a town (about 100,000 inhabitants) and the third group consisted of patients living in a rural area.

2.3. Statistical analysis

All analysis were performed by the use of SPSS 17.0. Mean and median DUP was calculated for all components of DUP and for the overall DUP. Because of the skewed distribution of DUP, we used non-parametric statistical analysis if DUP was one of the variables tested. Mann Whitney U tests were used to assess whether distributions of DUP were equal for two different groups and Kruskal Wallis tests were used to test for equality of median DUP of more than two groups. We used a generalized linear model (GLM), acknowledging the Gamma distribution of DUP, to assess confounding.

3. Results

A total number of 182 patients was included in the study. A summary of patients' characteristics is presented in Table 2. The mean age at onset for males was 21.8 years $\pm$ 4.9 (SD) and for females 22.5 years $\pm$ 5.8 (SD), difference in age at onset was not significant.

3.1. Duration of untreated psychosis

Mean total DUP for all patients (n = 182) was 53.6 weeks $\pm$ 116.8 116.8 (SD). The median DUP was 8.9 weeks, (Q1 = 2.0 and Q3 = 47.8, range 0–874). Fig. 1 gives an overview of the distribution.

Mean patient delay was 32.4 weeks $\pm$ 100.4 (SD) with a median of 0.5 weeks and a range from 0 day to 16 years (Q1 = 0.0 and Q3 = 12.7 weeks). Patient delay for 19 patients was zero because they had already been in mental health care treatment for another

Table 1
Definitions.

Duration of untreated psychosis	The time (weeks) between the first experience of psychotic symptoms for more than 1 week and the initiation of appropriate treatment
Patient delay	The time (weeks) between the first experience of psychotic symptoms for more than 1 week and first contact with a professional health care worker, e.g. a GP
Referral delay	The time (weeks) between first contact with a professional health care worker and referral to mental health care services
Delay within mental health care services	The time (weeks) between referral to MHS and initiation of appropriate treatment
Psychotic symptoms	A PANSS score of 4 or more on at least one of the items 1 (delusions), 3 (hallucinatory behaviour), 5 (grandiosity), 6 (suspiciousness/persecution) or 9 (unusual thought content)
Appropriate treatment	The use of antipsychotic medication for at least 1 month and/or the start of intensive treatment. If so, the first day of receiving medication or the first day of start of intensive treatment was noted as start of appropriate treatment. Whatever was first
Intensive treatment	Frequent contacts with patient and their family, psychoeducation and rehabilitation. The first day of this intensive treatment was noted as start of intensive treatment