Schizophrenia Research xxx (2017) xxx–xxx

Contents lists available at ScienceDirect

Schizophrenia Research

journal homepage: www.elsevier.com/locate/schres

Utilising symptom dimensions with diagnostic categories improves prediction of time to first remission in first-episode psychosis

Olesya Ajnakina [a], John Lally [a,b,1], Marta Di Forti [c,d], Simona A. Stilo [a], Anna Kolliakou [e], Poonam Gardner-Sood [a], Paola Dazzan [a,d], Carmine Pariante [d,e], Tiago Reis Marques [a], Valeria Mondelli [d,e], James MacCabe [a,d], Fiona Gaughran [a,d], Anthony S. David [a,d], Daniel Stamate [f], Robin M. Murray [a,d,2], Helen L. Fisher [c,*,2]

[a] Department of Psychosis Studies, Institute of Psychiatry, Psychology & Neuroscience, King's College London, London, UK
[b] Department of Psychiatry, School of Medicine and Medical Sciences, University College Dublin, St Vincent's Hospital, Dublin, Ireland
[c] MRC Social, Genetic & Developmental Psychiatry Centre, Institute of Psychiatry, Psychology & Neuroscience, King's College London, London, UK
[d] National Institute for Health Research (NIHR) Mental Health Biomedical Research Centre at South London and Maudsley NHS Foundation Trust and King's College London, UK
[e] Department of Psychological Medicine, Institute of Psychiatry, Psychology and Neuroscience, Kings College London, London, UK
[f] Data Science & Soft Computing Lab, and Department of Computing, Goldsmiths College, University of London, London, UK

ARTICLE INFO

Article history:
Received 21 May 2017
Received in revised form 19 July 2017
Accepted 19 July 2017
Available online xxxx

Keywords:
Accelerated failure time model
Diagnosis
Psychosis
Remission
Schizophrenia
Symptom dimensions

ABSTRACT

There has been much recent debate concerning the relative clinical utility of symptom dimensions versus conventional diagnostic categories in patients with psychosis. We investigated whether symptom dimensions rated at presentation for first-episode psychosis (FEP) better predicted time to first remission than categorical diagnosis over a four-year follow-up. The sample comprised 193 FEP patients aged 18–65 years who presented to psychiatric services in South London, UK, between 2006 and 2010. Psychopathology was assessed at baseline with the Positive and Negative Syndrome Scale and five symptom dimensions were derived using Wallwork/Fortgang's model; baseline diagnoses were grouped using DSM-IV codes. Time to start of first remission was ascertained from clinical records. The Bayesian Information Criterion (BIC) was used to find the best fitting accelerated failure time model of dimensions, diagnoses and time to first remission. Sixty percent of patients remitted over the four years following first presentation to psychiatric services, and the average time to start of first remission was 18.3 weeks (SD = 26.0, median = 8). The positive (BIC = 166.26), excited (BIC = 167.30) and disorganised/concrete (BIC = 168.77) symptom dimensions, and a diagnosis of schizophrenia (BIC = 166.91) predicted time to first remission. However, a combination of the DSM-IV diagnosis of schizophrenia with all five symptom dimensions led to the best fitting model (BIC = 164.35). Combining categorical diagnosis with symptom dimension scores in FEP patients improved the accuracy of predicting time to first remission. Thus our data suggest that the decision to consign symptom dimensions to an annexe in DSM-5 should be reconsidered at the earliest opportunity.

1. Introduction

The wide variability in treatment response among patients with first-episode psychosis (FEP) can be understood by viewing psychosis as involving heterogeneous disorders with diverse clinical presentations (Keshavan et al., 2013). Currently, the validity of traditional diagnoses is highly debated (Jablensky, 2016), and their link to the treatment and prognosis of psychotic disorders remains uncertain (Bentall, 2006; van Os et al., 1999). Instead, some postulate that psychosis symptom dimensions may be more useful in providing information about need for care and prognosis (Allardyce et al., 2007; Bakker et al., 2013; Demjaha et al., 2009). Although the ideal number and features of these dimensions is not confirmed, many studies suggest a symptom dimension model comprising five specific constructs (i.e., positive, negative, disorganised, mania, and depression symptoms) (van Os and Reininghaus, 2016). Based on previous work, Wallwork et al. (2012) derived a consensus five-factor model of psychosis that comprised positive (e.g., delusions, hallucinatory behaviour), negative (e.g., blunted affect, emotional withdrawal), disorganised/concrete (e.g., conceptual disorganisation, difficulty in abstract thinking), excited (e.g., excitement, hostility), and depressed (e.g., depression, guilt

* Corresponding author at: MRC Social, Genetic & Developmental Psychiatry Centre, Institute of Psychiatry, Psychology & Neuroscience, King's College London, 16 De Crespigny Park, London SE5 8AF, United Kingdom.
E-mail address: helen.2.fisher@kcl.ac.uk (H.L. Fisher).
[1] Present address: Department of Psychiatry, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin, Ireland.
[2] These are joint senior authors.

http://dx.doi.org/10.1016/j.schres.2017.07.042
0920-9964/

feeling) dimensions. This Wallwork/Fortgang model of psychosis (Wallwork et al., 2012) has been shown to be the most robust factorial solution for exploring symptom profiles in patients with psychosis (Langeveld et al., 2013); thus we will use this model in the present study.

Remission is one of the most commonly used indicators of treatment efficacy and response in psychosis (Lasser et al., 2007). Although 40–70% of patients with FEP achieve remission at some point over the course of their illness (Austin et al., 2013; Emsley et al., 2006; Lambert et al., 2006; Langeveld et al., 2012), predicting those who will remit, and how long this will take, remains challenging. Previously, age of illness onset and duration of untreated psychosis have been linked to time to remission (Malla et al., 2006), but the influence of symptom dimensions expressed at presentation to services has not yet been investigated in comparison to traditional diagnostic categories.

The DSM-5 schizophrenia panel initially recommended that symptom dimensions should be used to supplement categorical diagnosis but ultimately this view was rejected (van Os, 2015). In the present study, we compared the utility of psychosis symptom dimensions derived using the Wallwork/Fortgang five-factor model (Wallwork et al., 2012) with conventional diagnostic categories to predict time to first remission in a well-characterised sample of patients presenting to psychiatric services for the first time with psychosis. We hypothesised that the symptom dimensions would provide a more accurate prediction of time to first remission than diagnostic categories. Building on previous research which highlighted that combining dimensional measures with categorical diagnoses is more informative than considering them separately (Allardyce et al., 2007), we further tested whether combining symptom dimensions with categorical diagnoses led to a more robust model for predicting time to first remission. As the evidence suggests that the first 3–5 years after first illness onset constitutes a critical period for intervention (Crumlish et al., 2009), we focused on the first four years of illness after first contact with mental health services for psychosis.

2. Methods

2.1. Sample

Participants were recruited as part of the National Institute for Health Research (NIHR) Biomedical Research Centre (BRC) Genetics and Psychosis (GAP) study conducted in South London, UK. Further details of the sample are available in Di Forti et al. (2014). Briefly, this study included patients aged 18–65 years who presented to psychiatric services of the South London and Maudsley (SLaM) National Health Service (NHS) Mental Health Foundation Trust between December 2006 and October 2010 with a first episode of psychosis (Diagnostic and Statistical Manual of Mental Disorders (DSM)-IV; American Psychiatric Association, 1994). In total, 236 FEP patients were rated on the Positive and Negative Syndrome Scale (PANSS; Kay et al., 1987); 82% ($N = 193$) of these were successfully traced four years after first contact with mental health services. Therefore, this study involves retrospective analysis of the data collected prospectively for these 193 cases. Ethical permission was obtained from the SLaM and the Institute of Psychiatry Research Ethics Committee. All patients gave informed written consent after reading a detailed information sheet.

2.2. Measures at baseline

2.2.1. Socio-demographic characteristics

Information on socio-demographic characteristics was collated using a modified version of the Medical Research Council (MRC) Socio-demographic Schedule (Mallett et al., 2002). Ethnicity was self-ascribed using the 16 categories employed by the UK Census in 2001 (http://www.ons.gov.uk/ons/guide-method/census/2001/index.html).

2.2.2. Clinical assessments at baseline

Age at first contact was defined as age at which a patient was first in contact with mental health services due to their psychotic symptoms (McKenzie et al., 2001). Duration of untreated psychosis (DUP) was defined as the time between the date of appearance of the first psychotic symptom and the date of treatment with antipsychotic medications (Norman and Malla, 2001). The 30-item PANSS (Kay et al., 1987) was conducted in face-to-face interviews with patients to assess psychotic symptoms over the preceding week. In the present study, researchers underwent comprehensive training in administering the PANSS and had to demonstrate a high degree of comparability in their practice ratings with expert raters. Although not formally tested here, high levels of inter-rater reliability have previously been demonstrated after sufficient training (Kay et al., 1988; Muller and Wetzel, 1998). Baseline diagnoses were derived from interviews and mental health records using the Operational Criteria Checklist for Psychotic Illness (OPCRIT) (McGuffin et al., 1991). The diagnoses were grouped using DSM-IV codes into schizophrenia (295), schizophreniform disorder (295.40), affective psychoses (296, 296.24, 296.44), schizoaffective disorder (295.70), and other psychoses (297.1, 198.9).

2.3. Tracing patients at follow-up

Approximately 4 years ($M = 4.4$, $SD = 1.8$; 839 person years) after first contact with psychiatric services for psychosis, we sought to trace all 236 FEP cases included in the original GAP study and who had given consent for their clinical records to be accessed at follow-up. The tracing procedure is outlined in Fig. 1 and further information provided in Supplementary materials. During the first four years of follow-up, of all FEP cases, 15 (6.4%) had emigrated, 5 (2.1%) had died, and 7 (3.0%) were excluded as these patients did not have information on follow-up and their contact details were not available at baseline to enable us to trace them either via their GP or ONS/GRO tracing procedures. Those who had died tended to be significantly older at study entry (Supplementary Table 1). We were unable to trace 16 (6.8%) patients via electronic records. Ultimately, we successfully traced 93.2% of our original sample and information on first remission, time to first remission and other variables collected at follow-up was available for 81.8% ($N = 193/236$) of patients.

2.3.1. Measures at 4-year follow-up

Information on outcomes was collated from clinical records using the World Health Organisation (WHO) Life Chart Schedule (LCS) extended version (WHO, 1992). We used this measure at the end of the follow-up period to obtain standardised retrospective assessments of patients' experiences, clinical and social outcomes for the entire period of illness operationalised as the period from the first contact with mental health services for FEP to the date of the last assessment recorded in electronic notes. The LCS measure has been widely used in prospective and retrospective studies (Ajnakina et al., 2017; Morgan et al., 2014; Schoeler et al., 2017; van Os et al., 1996), and has been shown to be reliable for follow-up assessments and adaptable across cultures (Jablensky et al., 1992; Susser et al., 2000).

2.3.1.1. Clinical assessment at follow-up. Similar to previous research (Morgan et al., 2014) using information extracted from clinical records, first remission was operationalised as the very first continuous period of ≥6 months of a complete absence of a clear record of psychotic symptoms in clinical notes, including no evidence of re-emergence of psychotic symptoms, re-admission to psychiatric wards, and/or having been re-referred to acute home treatment/crisis intervention services during the follow-up period (Ajnakina et al., 2017). This definition did not depend on whether non-psychotic symptoms (e.g. depressed mood, neurotic manifestations) were absent, or whether patients were receiving treatment with antipsychotic medications during this period of remission. This definition of remission has been shown to be

Please cite this article as: Ajnakina, O., et al., Utilising symptom dimensions with diagnostic categories improves prediction of time to first remission in first-episode psychosis, Schizophr. Res. (2017), http://dx.doi.org/10.1016/j.schres.2017.07.042