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Family history of psychosis and outcome of people with schizophrenia in rural China: 14-year follow-up study

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ABSTRACT

Objective: This study examined the differences in 14-year outcomes of persons with schizophrenia with and without family history of psychosis in a rural community in China.

Methods: All participants with schizophrenia (n = 510) aged 15 years and older were identified in a 1994 epidemiological investigation of 123,572 people and followed up in 2004 and 2008 in Xinjin County, Chengdu, China.

Results: Individuals with positive family history of schizophrenia had significantly younger age of first onset than those with negative family history of schizophrenia in 1994 and 2004. Compared with individuals with negative family history of schizophrenia, those with positive family history of schizophrenia had significantly higher rate of homelessness and lower rate of death due to other reasons in 10-year (2004) and 14-year follow-up (2008). There were no significantly differences of mean scores on PANSS, SDSS and GAF in 2008 between positive and negative family history groups.

Conclusions: The positive family history of schizophrenia is strongly related to younger age of onset, and may predict a poorer long-term outcome (e.g., higher rate of homelessness) in persons with schizophrenia in the rural community. The findings have implications for further studies on specific family-related mechanisms on clinical treatment and rehabilitation, as well as for planning and delivering of community-based mental health services.

1. Introduction

Family history of schizophrenia is the strongest determinant of schizophrenia risk at the individual level (Pedersen and Mortensen, 2001). Several studies have suggested that a positive family history (FH +) is associated with the risk of schizophrenia and related clinical outcomes (Agerbo et al., 2015; Kendler et al., 1997; Malaspina et al., 1998). The potential link between FH+ and outcomes of people with schizophrenia could be explained by both genetics and environment, while heterogeneity is still observed in clinical, cognitive, and social functioning (Anglin et al., 2009; Esterberg et al., 2010).

Previous studies have widely documented the impacts of FH+ on outcomes of people with schizophrenia. Compared to people without family history of psychosis (FH-), FH+ patients have an earlier age of first onset of psychosis (Albus and Maier, 1995; Alda et al., 1996; Ritsner et al., 2007; Wickhama et al., 2002), increased suicide risk (Qin et al., 2002), higher rates of homelessness (Ran et al., 2006), more severe negative (Borkowska and Rybakowski, 2002; Malaspina et al., 2000; Martin-Reyes et al., 2011; Ritsner et al., 2005) and positive symptoms (Arajarvi et al., 2006), and poorer social functioning (Arajarvi et al., 2006; Käkelä et al., 2014; McGlashan, 1986).

However, while studies identified the urban-rural differences in the impacts of FH+ (Mortensen et al., 1999; Pedersen and Mortensen, 2001; van Os et al., 2004), few focused on the outcomes of people living in the rural community. Besides, most previous studies on family history and outcomes of people with schizophrenia are cross-sectional studies or involve short-term follow-up (Käkelä et al., 2014). There are few long-term follow-up studies of family history and outcomes of people with schizophrenia, especially for patients living in the rural context. Moreover, evidence shows that the impact of FH+ may be

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greatly affected by cultural factors, yet there were very few non-Western studies existed (Käkelä et al., 2014). Prospective longitudinal studies should be conducted in rural non-Western community sample to unravel the multifactorial outcomes of schizophrenia between people with and without positive family history. Overall long-term outcomes of schizophrenia are a major concern in psychiatry.

In light of the dearth of research on the relationship between family history of psychosis and long-term outcomes of schizophrenia, the objectives of this 14-year prospective follow-up study were: 1) to explore the differences in long-term outcomes of persons with schizophrenia with and without family history of psychosis; and 2) to test the hypothesis that family history of psychosis is a predictor for the long-term outcomes of persons with schizophrenia. This three-wave longitudinal study provides a unique opportunity to examine whether the family history of psychosis is related to the 14-year follow-up outcomes in persons with schizophrenia within the rapidly transforming socio-economic context of rural China.

2. Method

2.1. Study population

The study data is derived from the Chengdu Mental Health Project (CMHP), a prospective longitudinal follow-up study on mental illness and mental health services in Chengdu, China (Ran et al., 2015a, 2003b, 2001). All subjects with schizophrenia (n = 510) were identified in 1994 from an epidemiological investigation of 123,572 people aged 15 years and older in six townships of Xinjin County, Chengdu, China. Subjects were identified through screening procedures for psychosis (face-to-face interviews with the head of each household together with the key informant method) and general psychiatric interview. The details of this investigation have been described in previous publications (Ran et al., 2007, 2009, 2015a,b). In brief, all subjects lived in the six rural townships and met ICD-10 criteria for a diagnosis of schizophrenia based on standardized administration of the Present State Examination (PSE) by trained research interviewers (Ran et al., 2003b, 2001). Based on the 1994 data, we successfully followed up and collected information on 98.0% (n = 500) of subjects with schizophrenia ten years later (2004) and 95.9% of subjects (n = 489) 14 years later (2008) (Ran et al., 2015a,b 2016). The study was approved by the University Committee on Human Research Subjects (CHRS) and all respondents gave informed consent at each stage of the study.

2.2. Measurement

The principal assessment tools administered at baseline included the Present State Examination (PSE) and Social Disability Screening Schedule (SDSS) (Ran et al., 2003b, 2004, 2001). The Patients Follow-up Schedule (PFS) was used in 2004 and 2008 to collect information about demographic characteristics, clinical symptoms, treatment information, criminal behavior, social functioning, and social support (Ran et al., 2009, 2011). The PFS were administered by trained psychiatrists. The SDSS, Positive and Negative Syndrome Scale (PANSS) and Global Assessment of Functioning (GAF) were also used in 2008 (Ran et al., 2015a,b).

For subjects who were alive at the follow-ups in 2004 and 2008, at least one person familiar with each subject's life and circumstances and the subjects themselves were interviewed. For deceased subjects, the next-of-kin or at least one person familiar with the subject was interviewed (Ran et al., 2015a,b). The family history of schizophrenia (FHS) status was defined according to whether or not subjects had at least one first-degree relative who once suffered from schizophrenia. Subjects were identified as homeless if informants reported that the respective subjects had wandered and slept in public places and that their whereabouts, at the time, were unknown. Family economic status was defined according to the average family income (e.g., ≥ mean level or < mean level) in local community. Criminal behavior (e.g., theft, physical and sexual assault behaviors, and murder) was defined according to subjects' and informants' report (e.g., relatives).

In addition to information collected from interviews, medical and psychiatric treatment records were ascertained from hospitals, village doctors' clinics, and traditional healers for all subjects. For deceased subjects, information about the causes and time of death was obtained from the death certification and suicide note, where applicable, was also obtained. The classification of each death as due to suicide, accident, or natural causes represented the consensus opinion of interviewers and independent researchers after reviewing all information obtained.

2.3. Statistical analysis

Cross-tabulation between family history of schizophrenia status and outcome was conducted in both 2004 and 2008. The relationship between family history of schizophrenia and other variables at three time points from 1994 to 2008 was explored. Correlates of family history of schizophrenia were assessed using Chi-square (χ^2) tests for categorical variables and t tests for continuous factors. Statistical analyses were performed using SPSS Windows software (version 20.0).

3. Results

Of the 510 persons identified as having schizophrenia at baseline in 1994, 10 were excluded in 2004 and 21 were excluded in 2008 due to loss to follow up (Ran et al., 2009). Therefore, 500 subjects (98.0%) and 489 subjects (95.9%) were followed up in 2004 and 2008, respectively. Informants were available for all these subjects (100%). In 2008, information on 300 subjects was provided by both subjects and their informants, and information on 189 subjects was provided by their informants alone.

Table 1
Status of the cohort participants in 2004 and 2008.

	2004 (N = 500)		2008 (N = 489)	
	Positive family history of schizophrenia (N = 112) N (%)	Negative family history of schizophrenia (N = 388) N (%)	Positive family history of schizophrenia (N = 109) N (%)	Negative family history of schizophrenia (N = 380) N (%)
Survivals	83 (74.1)	289 (74.5)	72 (66.1)	256 (67.4)
Deaths				
Suicide	7 (6.3)	14 (3.6)	8 (7.3)	16 (4.2)
Death due to other causes	9 (8.0)	68 (17.5)*	14 (12.8)	83 (21.8)*
Homelessness	13 (11.6)	17 (4.4)**	15 (13.8)	25 (6.6)*

Note: *p < 0.05, **p < 0.01.