Characteristics of New and Deceased Patients with Severe Mental Disorders in a Beijing Community, 2011-2021: Postprint

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Abstract

Background: Currently, there is a gap between the population with severe mental disorders and the capacity for treatment and hospitalization, with most patients living long-term in the community. Providing timely and effective primary mental health services for this population through grassroots community health institutions is of great significance.

Objective: To analyze the characteristics of new and deceased patients with severe mental disorders in a community in Beijing from 2011-2021, and to provide references for community-based prevention and treatment of mental illnesses.

Methods: Patient information was retrieved from the Beijing Mental Health Information Management System, and descriptive statistical methods were used to analyze the data.

Results: From 2011-2021, the number of new patients each year exceeded that of deceased patients, with the prevalence rate increasing annually from 2012. Compared with the baseline, the proportion of schizophrenia decreased while that of bipolar disorder increased in 2021; the proportion of patients with primary school education or below decreased, while those with college education or above increased; the proportions of employed patients, patients aged $ $46 years, and patients with an unregistered period $ $5 years increased compared with the baseline, all showing statistically significant differences ($P<0.05$). From 2011-2021, there were 212 new patients, with schizophrenia and bipolar disorder ranking as the top two among the six categories of severe mental disorders; the age at first onset was concentrated in the 19-45 years age group (65.57%); patients with an unregistered period of 5 years or less were the most numerous (40.57%), with a median of 8.50 years. From 2011-2021, there were 90 deceased patients, with schizophrenia accounting for the most deaths (78 cases); the majority of deceased patients were in the age group over 60 years (74.45%); the top three

causes of death were physical diseases, suicide, and accidental death, with the YLL rate fluctuating between -0.250‰ and 1.436‰.

Conclusion: From 2011–2021, new cases of community-based patients with severe mental disorders exceeded deaths, the prevalence showed an upward trend, the unregistered period for new patients shortened, and deceased patients were mainly elderly individuals with physical diseases; targeted measures should be implemented to address these changes.

Full Text

Characteristic Analysis of Newly Diagnosed and Deceased Patients with Severe Mental Illness in a Beijing Community, 2011–2021

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Abstract

Background
There exists a significant gap between the number of patients with severe mental illness and available treatment capacity, with most patients living long-term in community settings. Providing timely and effective primary mental health services to this population through community health institutions is therefore of critical importance.

Objective
To analyze the characteristics of newly diagnosed and deceased patients with severe mental illness in a Beijing community from 2011 to 2021, providing reference for community-based mental illness prevention and treatment.

Methods
Patient information was retrieved from the Beijing Mental Health Information Management System. Descriptive statistical methods were employed for data analysis.

Results
(1) From 2011 to 2021, the number of newly diagnosed patients exceeded the number of deaths each year, with prevalence rates showing an annual increase beginning in 2012. (2) Compared with baseline data, the proportion of schizophre-

nia decreased while bipolar disorder increased by 2021. The proportion of patients with primary school education or below decreased, while those with college education or above increased. The proportions of employed patients, patients aged $ $46 years, and patients with a file establishment delay $ $5 years all increased compared with baseline—all showing statistically significant differences (P<0.05). (3) There were 212 newly diagnosed patients from 2011 to 2021, with schizophrenia and bipolar disorder ranking as the top two disorders among the six categories of severe mental illness. The age at first onset was concentrated in the 19–45 age group (65.57%). Patients with a file establishment delay of $ $5 years were most common (40.57%), with a median delay of 8.50 years. (4) There were 90 deaths from 2011 to 2021, with schizophrenia accounting for the most deaths (78 cases). Patients aged over 60 accounted for the majority of deaths (74.45%). The top three causes of death were somatic disease, suicide, and accidental death, with YLL rates fluctuating between -0.250‰ and 1.436‰.

Conclusion

From 2011 to 2021, newly diagnosed patients outnumbered deaths in the community, prevalence rates showed an upward trend, file establishment delays shortened among new patients, and deaths were predominantly among elderly patients with somatic diseases. Targeted measures should be implemented to address these changes.

Keywords

Severe mental illness; Community; Newly diagnosed; Death; Prevalence rate

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Severe mental illness refers to psychiatric disorders with severe symptoms in which patients cannot fully comprehend their own health status or objective reality. These conditions are characterized by high prevalence, high recurrence rates, significant social aggression, and high disability rates [1-2]. Such diseases not only severely impact the quality of life of patients and their families but also impose a heavy burden on society, representing both a major public health issue and a prominent social problem [3]. China has a large number of patients with severe mental illness. By the end of 2021, there were 6.43 million registered patients with severe mental disorders nationwide [4], while the service system construction has lagged behind, with insufficient total service resources (the national average is 1.12 psychiatric beds per 10,000 people) [5]. The gap between patient population and treatment capacity has resulted in most patients with mental disorders living long-term in community settings. Therefore, providing timely and effective primary mental health services to this population through community health institutions is of great significance. This study analyzes the characteristics of newly diagnosed and deceased patients with severe mental illness in a Beijing community from 2011 to 2021, aiming to identify changing patterns and development trends to provide reference for future community-based mental illness prevention and treatment work.

1.1 Data Sources

All 档案 information for the six categories of severe mental illness patients managed by this community health service center as of 2021 served as the data source. According to the *National Basic Public Health Service Standard Operating Manual (3rd Edition)* [6], the six categories of severe mental illness include: schizophrenia, bipolar disorder, schizoaffective disorder, persistent delusional disorder, mental disorders due to epilepsy, and mental retardation with comorbid mental disorders. Diagnosed patients are reported by medical institutions with psychiatric qualifications to the Beijing Mental Health Information System according to the *Mental Health Law*. The community health service center where the patient resides then receives this information, establishes electronic files through the system, and incorporates the patient into community management.

1.2 Methods

Using the Beijing Mental Health Information Management System, we exported 档案 information for all patients meeting diagnostic criteria for the six categories, including demographic data such as gender and age, date of first onset, file establishment date, date of death, cause of death, and related notes. Data were reviewed, verified, and categorized. Information up to December 31, 2010 served as baseline data, while newly diagnosed and deceased patient information from 2011–2021 was compiled. Various dates were converted into data for age at onset, age at file establishment, age at death, etc. Community permanent population numbers were obtained from the community sub-district office' s health construction department.

1.3 Statistical Methods

Excel 2019 was used to process exported data and calculate annual prevalence rates (total registered severe mental illness patients/community permanent population × 1,000), file establishment delay (interval between first onset and community file establishment), and YLL rate (YLLs/P × 1,000, where P is total population). Years of life lost (YLLs) refers to the number of years lost due to premature death before reaching life expectancy. According to the *2021 Statistical Bulletin on the Development of China' s Health Undertakings* released by the National Health Commission in July 2022 [7], the average life expectancy of Chinese residents in 2021 was 78.2 years.

SPSS 25.0 was used for statistical analysis of general demographic data. Measurement data were expressed as mean ± standard deviation, and count data as frequency and constituent ratio. Chi-square tests were used to compare demographic data between the 2010 baseline and 2021 registered patients, with $P<0.05$ considered statistically significant.

By the end of 2010, the community health service center had 288 registered patients with severe mental illness, increasing to 410 registered patients by 2021

(see Table 1). The age range of registered patients was 17-90 years, with an average age of (55.96$±$14.07) years, including 196 males and 214 females. The distribution by diagnosis was: schizophrenia (289 cases), bipolar disorder (91 cases), schizoaffective disorder (6 cases), persistent delusional disorder (4 cases), mental disorders due to epilepsy (11 cases), and mental retardation with comorbid mental disorders (11 cases). Comparison of general demographic data distributions showed statistically significant changes in disease type, education level, employment status, age at onset, and file establishment delay.

Table 1 General Demographic Data

Category	Baseline Patients (N=288)	Registered Patients (N=410)
Gender		
Male	154 (53.47%)	196 (47.80%)
Female	134 (46.53%)	214 (52.20%)
Disease Type		
Schizophrenia	246 (85.42%)	289 (70.49%)
Bipolar Disorder	20 (6.94%)	91 (22.19%)
Other	22 (7.64%)	30 (7.32%)
Education Level		
Primary School or Below	43 (14.93%)	25 (6.10%)
Junior High School	125 (43.40%)	132 (32.20%)
High School	72 (25.00%)	129 (31.46%)
College or Above	48 (16.67%)	124 (30.24%)
Employment Status		
Employed	5 (1.74%)	31 (7.56%)
Unemployed/Retired/Student	163 (56.60%)	219 (53.41%)
Other	120 (41.67%)	160 (39.02%)
Age at Onset (years)		
19-45	228 (79.17%)	286 (69.76%)
$ $46	60 (20.83%)	124 (30.24%)
File Establishment Delay (years)		
$ $5	47 (16.32%)	61 (14.88%)
5-15	215 (74.65%)	286 (69.76%)
$ $16	26 (9.03%)	63 (15.36%)

Note: indicates P<0.05*

The fewest deaths occurred in 2011 with 3 cases, yielding the lowest mortality rate of 2.80 per 100,000. The highest number of deaths occurred in 2015 with 15 cases, reaching a peak mortality rate of 12.50 per 100,000. YLL rates fluctuated between -0.250‰ and 1.436‰ (see Table 2).

Table 2 Prevalence, Mortality, and YLL Rates from 2011-2021

Year	Prevalence Rate (‰)	Mortality Rate (per 100,000)	YLL Rate (‰)

2.3 Characteristics of Newly Diagnosed Cases

From 2011-2021, there were 212 newly diagnosed patients, including 84 males (39.62%) and 128 females (60.38%). The average age at onset was (35.10$±$14.44) years, with the youngest being 5 years old (a patient with mental retardation with comorbid mental disorders) and the oldest being 82 years old (a patient with bipolar disorder). Annual numbers of newly diagnosed patients and their general demographic characteristics and file establishment delays are detailed in Table 3 .

2.4 Characteristics of Deceased Cases

From 2011-2021, there were 90 deaths. The leading cause of death was somatic disease (76 cases, 84.44%), including cardiovascular disease (41 cases), cerebrovascular disease (10 cases), cancer (9 cases), and other somatic diseases (16 cases). Suicide accounted for 7 deaths (7.78%), accidental death for 2 cases, and 5 cases were unclassifiable other causes. Twenty-three deaths (25.55%) occurred at age $ $60, 32 (35.56%) at age 61-75, and 35 (38.89%) at age $ 76.$The youngest death was 33 years old (suicide), the oldest was 96 years old (cardiovascular disease), and the aver$ years. General demographic data and cause-of-death distributions for deceased patients are shown in Table 4 .

Discussion

In recent years, China has increasingly prioritized mental disorder prevention and treatment. In 2004, the state invested 6.86 million RMB to launch the “686” demonstration project nationwide, exploring socialized and standardized management models and working mechanisms for patients with mental illness [5]483. In 2009, community management of severe mental illness was incorporated into the national basic public health system, alongside chronic physical diseases such as hypertension and diabetes, to receive primary health care services. Various regions have introduced multiple measures to promote community-based mental disorder prevention and improve medical service quality. For example, Beijing established a mental health information management system for direct online reporting, creating health files and providing follow-up guidance for patients, offering free antipsychotic medications, free health examinations, nursing subsidies for family members, and community rehabilitation services. These measures have provided strong support for advancing mental health work at the primary level. Severe mental illness shares similar characteristics with chronic physical diseases: prolonged course, fluctuating and recurrent conditions, and lifelong prevalence. However, these disorders also have unique features: early

onset, mostly in young adulthood; lack of insight; and impaired social functioning. Early onset implies longer disease duration and heavier family and socioeconomic burden. Lack of insight means lower medication adherence, making it difficult for patients to complete self-health management independently. Impaired social functioning means patients struggle to establish normal interpersonal relationships and integrate into society. Therefore, community health services for severe mental illness should focus on early detection, early diagnosis, early intervention, and full-course management. The changing characteristics of newly diagnosed and deceased patients reflect regional disease incidence trends and health status, representing the entry and exit points for community mental health services. Understanding entry-point characteristics provides a basis for implementing the "three early" principle, helping patients access professional medical services as soon as possible to maintain stable conditions. Understanding exit-point characteristics enables targeted measures to improve patients' quality of life and extend life expectancy.

Epidemiological survey data from 2019 show that the weighted lifetime prevalence of schizophrenia in China is 0.6% (95% CI: 0.1%-1.0%), and that of bipolar disorder is 0.6% (95% CI: 0.4%-0.7%) [8]. Our study found that the number of newly diagnosed severe mental illness patients in the community exceeded deaths each year, with prevalence rates showing a gradual upward trend. The 2021 prevalence rate of 3.77‰ exceeded Beijing' s average level of 3.6‰ [9]. The increase in prevalence from 2011-2021 in this study may be related to strengthened national monitoring and management of severe mental illness patients [3]779, gradual improvement of primary-level mental disorder prevention systems, and increased detection rates [10]. However, attention should also be paid to whether this change reflects a gradually worsening trend in community mental disorders, which should alert primary mental health workers to implement targeted prevention and control measures.

Analysis of patients' general demographic data revealed: (1) Disease types: Schizophrenia (70.49%) and bipolar disorder (22.19%) remained the top two disorders among the six categories of severe mental illness, but schizophrenia decreased while bipolar disorder increased compared with baseline. (2) Age at onset: The proportion of middle-aged and elderly patients aged $ $46 increased compared with baseline. (3) Education level: Compared with baseline, patients with primary school education or below decreased significantly, while those with college education or above increased. (4) Employment status: The proportion of employed patients increased compared with baseline. These findings suggest that among newly diagnosed patients from 2011-2021, the increase in bipolar disorder patients was more pronounced, with new patients showing characteristics of later onset age, higher education levels, and certain work capabilities—offering some hope for recovery. However, it should be noted that demographic characteristics such as young adulthood (69.76%), medium education level (junior and senior high school combined 63.66%), and unemployment (53.41%) showed no significant changes over the 11 years and remained dominant. Therefore, interpretations of the observed changes should remain cautious.

Analysis of the 212 newly diagnosed patients revealed: Schizophrenia patients (121 cases) outnumbered those with bipolar disorder (77 cases) and the other four mental disorders (14 cases). Female patients (128 cases) outnumbered males (84 cases). The age at onset was predominantly young adulthood (19–45 years, 65.57%). File establishment delay reflects the time interval from first onset to community file establishment. Related to this is the duration of untreated psychosis (DUP)—the interval from first onset to first treatment. Research has found that longer DUP in patients with mental disorders correlates with more severe psychiatric symptoms, poorer social functioning, and worse overall outcomes [11-13]. Therefore, multiple countries emphasize the need to shorten DUP through early detection, treatment, and management. For example, the UK published *Achieving Better Access to Mental Health Services by 2020*, requiring over 50% of patients with first-episode mental illness to begin treatment within 2 weeks of referral to early intervention services [14]. One survey showed that 70.7% of patients with mental disorders had DUP within 1 year [15]. As an extension of DUP, longer file establishment delay causes similar problems. In this community, 40.57% (86/212) of newly diagnosed patients had file establishment delays $ $5 years, higher than the 2010 baseline (19.10%) and 2021 overall level (31.22%). Among these, 26 cases (12.26%) were identified, diagnosed, and filed in the same year. Patients with delays $ $16 years accounted for 29.25% (62/212), lower than the 2010 baseline (44.79%) and 2021 overall level (33.17%). These findings indicate that efforts by various social sectors over the past 11 years have achieved some success in promoting early detection, treatment, and community health service utilization. However, the median delay of 8.50 years suggests room for further improvement. Future efforts should: (1) Identify suspected or potential patients as early as possible through community screening, health education, and multi-sectoral information sharing, mobilizing them to seek medical attention to shorten the time from onset to consultation; (2) Strengthen integrated hospital-community mental health service construction, using direct online reporting to transfer confirmed patient information to local community health institutions as early as possible for community management, shortening the interval from diagnosis confirmation to community file establishment.

Analysis of the 90 deceased patients revealed: Among the six categories of severe mental illness, schizophrenia had the highest number and proportion of deaths (78 cases, 86.67%), consistent with Beijing survey results [16], possibly related to the larger base of schizophrenia patients. Patients aged over 60 accounted for the highest number and proportion of deaths (67 cases, 74.45%). Excluding 5 deaths from other causes, the leading causes of death in the community were somatic disease (76 cases, 84.44%), suicide (7 cases, 7.78%), and accidental death (2 cases, 2.22%), consistent with Shenzhen survey results [17]. Among somatic diseases, the top three causes were cardiovascular disease (41 cases, 53.95%), cerebrovascular disease (10 cases, 13.16%), and cancer (9 cases, 11.84%). Annual mortality rates fluctuated between 2.80 and 12.50 per 100,000, with YLL rates fluctuating between -0.250‰ and 1.436‰. However, YLL rates

exceeded 0 in 10 of the 11 years, indicating that community patients with severe mental illness had shorter lifespans than the general population' s average life expectancy. Higher YLL values indicate greater years of life lost due to severe mental illness and heavier disease burden. Data from an analysis of health status in 34 provincial-level administrative units in China showed that disease burden from mental disorders ranked second among chronic diseases and was one of the three leading causes of healthy life years lost [18]. This suggests that primary mental health work should implement full-course, all-around management concepts. Mental illness prevention and treatment should not only focus on controlling psychiatric symptoms and restoring social functioning but also monitor progression of somatic diseases. Mental health doctors should establish liaison-consultation systems with general practitioners at the community level, guiding patients to undergo health examinations in a timely and standardized manner. Health examination frequency should be increased for elderly patients with mental disorders aged over 60, and patients with comorbid somatic diseases should be promptly referred to general practitioners. Health education should be introduced early to correct patients' unhealthy lifestyles. Regarding suicide, mental health doctors should conduct more comprehensive and detailed follow-up assessments, collecting information from multiple sources including community members, neighbors, and family members when necessary, to identify suicide risk factors early and intervene promptly.

In summary, this study compiled information on newly diagnosed and deceased patients with severe mental illness in the community from 2011-2021, revealing the following characteristics: (1) Community prevalence showed a slow upward trend over the past decade beginning in 2012; (2) Compared with baseline, schizophrenia and bipolar disorder remained the top two disorders, but bipolar disorder showed significant increase over the 11 years, while middle-aged and elderly patients, those with higher education levels, and those with certain work capabilities increased significantly, and patients with primary school education or below decreased; (3) Compared with baseline, the number of newly diagnosed patients with short file establishment delays ($ $5 years) increased; (4) Deceased patients were predominantly elderly with somatic diseases, and community patients' lifespans were below the average population life expectancy. In response to these characteristics, we recommend multi-sectoral collaboration with various measures to slow the rising prevalence trend; implement early detection and diagnosis principles to shorten file establishment delays and ensure patients access community mental health services as early as possible; and increase health examination frequency for elderly patients with severe mental illness, with communities having adequate resources establishing liaison-consultation systems between mental health doctors and general practitioners. Several limitations should be noted: (1) Data were derived from a single community, making generalizations inappropriate—future studies should include multiple communities with different characteristics (urban, rural, etc.); (2) Analysis of annual data did not reveal differences between years or trend changes in characteristics of newly diagnosed and deceased patients, possibly due to small sample size—future studies should

increase sample size where possible.

Author Contributions

SUN Xuhai: Conceptualization, data collection, writing and revision; SHI Xiuxiu: Data processing and analysis; ZHAO Zhengzheng: Data collection and literature review; HAN Jinxiang: Overall research objective formulation and article review; All authors approved the final manuscript.

Conflict of Interest

The authors declare no conflict of interest.

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Note: Figure translations are in progress. See original paper for figures.