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

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Date: 2023-04-10T00:00:00+00:00

Abstract

Background Currently, there exists a contradiction between the large population of patients with severe mental disorders and insufficient treatment capacity in China. Most patients live long-term in the community, and it is of great significance for community health service institutions to provide timely and effective primary mental health services for this population.

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

Methods In January 2022, information on registered patients with severe mental disorders of six categories (schizophrenia, bipolar disorder, schizoaffective disorder, persistent delusional disorder, mental disorder due to epilepsy, and mental disorder associated with intellectual disability) in a community was obtained through the Beijing Mental Health Information Management System, including demographic characteristics, disease status, and registration status. The prevalence rate, mortality rate, and years of life lost (YLL) rate for each year from 2011 to 2021 were calculated. Using patient information as of December 31, 2010 as baseline data, information on newly added and deceased patients for each year from 2011 to 2021 was compiled.

Results From 2011 to 2021, the number of newly added patients each year exceeded the number of deceased patients, with the prevalence rate increasing year by year from 2012, reaching 3.77‰ in 2021. Compared with baseline, patients with severe mental disorders in the community in 2021 had higher education levels, a higher proportion of employed individuals, an increased proportion of elderly patients aged $ $60 years, a decreased proportion of patients with

schizophrenia and an increased proportion of patients with bipolar disorder, and a shortened period without registration, with statistically significant differences (P<0.05). From 2011 to 2021, there were 212 newly added patients: the disease types were predominantly schizophrenia (57.08%, 121/212) and bipolar disorder (36.32%, 77/212), the age of onset was concentrated at 19-45 years (65.57%, 139/212), the period without registration was mostly $ $5 years (40.57%, 86/212), and the median period without registration was 8.50 (15.5) years. From 2011 to 2021, there were 90 deceased patients in total, with patients with schizophrenia accounting for the majority of deaths (86.67%, 78/90), those aged >60 years at death accounting for 74.44% (67/90), and the top three causes of death being physical diseases (84.44%, 76/90), suicide (7.78%, 7/90), and accidental death (2.22%, 2/90). The YLL rate from 2011 to 2021 ranged from -0.250‰ to 1.436‰.

Conclusion From 2011 to 2021, newly added patients with severe mental disorders in the community outnumbered deceased patients, with the prevalence rate showing an upward trend, the period without registration for newly added patients shortened, and deceased patients being predominantly elderly individuals with physical diseases; targeted measures should be taken to address these changes.

Full Text

Abstract

Background: In China, a large population of patients with severe mental illness contrasts sharply with insufficient treatment capacity. Since most patients reside long-term in the community, community health institutions play a crucial role in providing timely and effective primary mental health services. **Objective:** To analyze the characteristics of newly registered and deceased patients with severe mental illness in a Beijing community from 2011 to 2021, providing evidence for community-based mental illness prevention and treatment. **Methods:** In January 2022, we obtained data on registered patients with severe mental illness (schizophrenia, bipolar disorder, schizoaffective disorder, persistent delusional disorder, mental disorders due to epilepsy, and mental retardation with concomitant mental disorders) from the Beijing Municipal Mental Health Information Management System, including demographic characteristics, disease status, and file establishment status. Annual prevalence, mortality, and years of life lost (YLL) rates were calculated for 2011–2021. Using patient information up to December 31, 2010 as baseline, we compiled data on newly registered and deceased patients from 2011 to 2021. **Results:** From 2011 to 2021, newly registered patients outnumbered deceased patients annually, with prevalence increasing year-over-year since 2012 to reach 3.77‰ in 2021. Compared with baseline, patients in 2021 had higher education levels, higher employment rates, a larger proportion of elderly patients aged $ $60 years, lower schizophrenia prevalence, higher bipolar disorder prevalence, and

shorter non-registration periods (all P<0.05). Among 212 newly registered patients, schizophrenia (57.08%, 121/212) and bipolar disorder (36.32%, 77/212) predominated, with onset age concentrated at 19–45 years (65.57%, 139/212). Most had non-registration periods $ $5 years (40.57%, 86/212), with a median of 8.50 (15.5) years. Among 90 deceased patients, schizophrenia accounted for the majority (86.67%, 78/90), with 74.44% (67/90) dying after age 60. The top three causes of death were somatic disease (84.44%, 76/90), suicide (7.78%, 7/90), and accidental death (2.22%, 2/90). YLL rates ranged from -0.250‰ to 1.436‰ during 2011–2021. **Conclusion:** From 2011 to 2021, newly registered community patients with severe mental illness exceeded deaths, prevalence showed an upward trend, non-registration periods shortened, and deaths were dominated by elderly patients with somatic diseases. Targeted measures should address these changes.

Introduction

Severe mental illness refers to psychiatric disorders with severe symptoms that prevent complete awareness of one's health status or objective reality, characterized by high prevalence, high recurrence rates, significant social aggression, and high disability rates [1-2]. These diseases severely impact quality of life for patients and their families while imposing heavy societal burdens, representing both a major public health issue and a prominent social problem [3]. China has a large number of severe mental illness patients, with 6.43 million registered cases nationwide by the end of 2021 [4]. However, China's service system for these patients remains underdeveloped, with insufficient total resources (1.12 psychiatric beds per 10,000 population nationwide) [5]. The contradiction between a large patient population and limited treatment capacity results in most patients living long-term in the community. Data show that 5.72 million severe mental illness patients in China are managed through community information systems, with a standardized management rate of 89.01% [4]. Providing timely, effective primary mental health services through community health institutions is therefore critically important. The "Healthy Beijing 2030" Outline emphasizes strengthening surveillance of mental disorder occurrence and trends, improving management mechanisms for severe mental illness patients, and comprehensively promoting community-based rehabilitation services [6]. This study analyzes characteristics of newly registered and deceased patients with severe mental illness in a Beijing community from 2011 to 2021 to identify patterns and trends, providing reference for future community mental illness prevention and treatment efforts.

Methods

1.1 Data Sources

According to the *National Basic Public Health Service Standard Operating Manual (3rd Edition)*, six categories of severe mental illness patients are currently

managed by community health service centers: schizophrenia, bipolar disorder, schizoaffective disorder, persistent delusional disorder, mental disorders due to epilepsy, and mental retardation with concomitant mental disorders [7]. Diagnosed patients are reported by psychiatric-qualified medical institutions to the Beijing Mental Health Information System according to the *Mental Health Law*, then received by community health service centers in their residential area, which establish electronic files and incorporate them into community management. In January 2022, we obtained data from the Beijing Municipal Mental Health Information Management System on these six categories of severe mental illness patients in a Beijing community from January 1, 2011 to December 31, 2021.

1.2 Research Methods

Through the Beijing Municipal Mental Health Information Management System, we collected patient file information including: (1) basic demographics (sex, age, marital status, education level, employment status, and minimum living allowance status); and (2) disease and file establishment information (disease type, first onset date, file creation date, and for deceased patients, death date, cause of death, and related notes). We converted first onset date, file creation date, and death date into onset age, non-registration period (interval between first onset and community file establishment), and death age. Using patient information up to December 31, 2010 as baseline, we compiled annual data on newly registered and deceased patients from 2011 to 2021.

We calculated annual prevalence, mortality, and years of life lost (YLL) rates for 2011–2021. (1) Prevalence = (number of registered severe mental illness patients) / (community permanent resident population) × 1,000, with community population data provided by the community sub-district office. (2) Mortality = (number of deceased patients in the year) / (community permanent resident population) × 100,000. (3) YLL rate = YLLs / total population × 1,000 = Σ(expected lifespan - actual death age) / total population × 1,000. YLL refers to years of life lost due to premature death from disease before reaching expected lifespan. According to the July 2022 National Health Commission's *2021 Statistical Bulletin on China's Health Development*, Chinese residents' average life expectancy in 2021 was 78.2 years [8].

1.3 Statistical Methods

We processed exported data using Excel 2019 and analyzed them using SPSS 25.0. Measurement data are expressed as ($\bar{x}$±s), and count data as percentages. Inter-group comparisons of count data used ^{2} tests, while rank data comparisons used Wilcoxon rank-sum tests, with $P<0.05$ considered statistically significant.

Results

2.1 Prevalence, Mortality, and YLL Rates

From 2011 to 2021, the number of newly registered patients exceeded deceased patients annually. Community prevalence of severe mental illness was 2.78‰ in 2011, rising year-over-year from 2012 to reach 3.77‰ in 2021. Mortality was 2.80/100,000 in 2011, peaking at 12.50/100,000 in 2015, and reaching 9.20/100,000 in 2021. The YLL rate was lowest in 2016 (-0.250‰) and highest in 2021 (1.436‰) .

2.2 Basic Characteristics of Patients

As of December 31, 2010, the community health service center had registered 288 patients with severe mental illness. By 2021, there were 410 registered patients, including 196 males (47.80%) and 214 females (52.20%), aged 17–90 years with a mean age of (56.0$±$14.1) years. The cohort included 289 schizophrenia patients (70.49%), 91 bipolar disorder patients (22.20%), 9 patients with mental disorders due to epilepsy (2.20%), 11 patients with mental retardation with concomitant mental disorders (2.68%), 6 schizoaffective disorder patients (1.43%), and 4 persistent delusional disorder patients (0.98%).

Compared with baseline, 2021 patients showed statistically significant differences in age distribution, education level, employment status, disease type, and non-registration period (P<0.05), but not in sex, marital status, minimum living allowance status, or onset age .

2.3 Characteristics of Newly Added Cases (2011–2021)

From 2011 to 2021, 212 new patients were registered, including 84 males (39.62%) and 128 females (60.38%). Disease types were predominantly schizophrenia (57.08%, 121/212) and bipolar disorder (36.32%, 77/212). Onset age concentrated at 19–45 years (65.57%, 139/212), with mean onset age of (35.1$±$14.4) years; the youngest onset was 5 years (mental retardation with concomitant mental disorders) and oldest was 82 years (bipolar disorder). Non-registration periods were mostly $ $5 years (40.57%, 86/212), with a median of 8.50 (15.5) years; 26 patients (12.26%) had non-registration periods $ $1 year .

2.4 Characteristics of Deceased Cases (2011–2021)

From 2011 to 2021, 90 patients died, including 42 males (46.67%) and 48 females (53.33%). Schizophrenia accounted for 78 deaths (86.67%) and bipolar disorder for 6 (6.67%). Causes of death included somatic disease (84.44%, 76/90), suicide (7.78%, 7/90), accidental death (2.22%, 2/90), and other/unspecified causes (5.56%, 5/90). Among somatic disease deaths, cardiovascular disease predominated (41 cases, 53.95%), followed by cerebrovascular disease (10 cases, 13.15%) and cancer (9 cases, 11.84%). Age at death was $ $60 years in 23 cases (25.55%),

61–75 years in 32 cases (35.56%), and \$ $76 years in 35 cases (38.89\pm$13.6) years. The youngest death was 33 years (suicide) and oldest was 96 years (cardiovascular disease) .

Discussion

Our analysis of 212 newly registered patients revealed that schizophrenia cases (121) exceeded bipolar disorder (77) and the other four categories combined (14). Female patients (128) outnumbered males (84), and onset age predominantly involved young adults aged 19–45 years (65.57%). The non-registration period reflects the interval between first onset and community file establishment, related to the duration of untreated psychosis (DUP). Research shows that longer DUP correlates with more severe psychiatric symptoms, poorer social functioning, and worse overall outcomes [12-14]. Consequently, multiple countries emphasize reducing DUP through "early detection, early diagnosis, early intervention, and full-course management." For instance, the UK mandated that over 50% of patients with first-episode psychosis begin treatment within 2 weeks of referral to early intervention services [15], while one survey found 70.7% of patients had DUP within 1 year [16].

As an extension of DUP, prolonged non-registration periods create similar problems. In our community, 40.57% (86/212) of new patients had non-registration periods \$ \$5 years, higher than baseline (19.10%) and the 2021 overall level (31.22%), with 26 patients (12.26%) having non-registration periods \$ \$1 year. Conversely, 29.25% (62/212) had non-registration periods \$ \$16 years, lower than baseline (44.79%) and 2021 overall level (33.17%). These findings suggest that efforts to promote early detection, treatment, and community service access have achieved some success over the past 11 years. However, the median non-registration period of 8.50 years indicates room for improvement. Future efforts should focus on community screening, education, and multi-sector information sharing to identify suspected or potential patients earlier and mobilize them for diagnosis, thereby shortening the interval from onset to consultation. Additionally, hospital-community integrated mental health service systems should be strengthened to facilitate earlier information transfer of diagnosed patients to community health centers through direct online reporting, reducing time from diagnosis to community registration.

Analysis of the 90 deceased patients revealed that among the six severe mental illness categories, schizophrenia had the highest number (78) and proportion (86.7%) of deaths, consistent with Beijing survey findings [17], likely due to schizophrenia's larger patient base. Elderly patients \$ \$60 years accounted for the majority of deaths (67 cases, 74.45%). Excluding 5 deaths from other causes, the leading causes were somatic disease (76 cases, 84.4%), suicide (7 cases, 7.8%), and accidental death (2 cases, 2.22%), matching Shenzhen survey results [18]. The top three somatic diseases were cardiovascular disease (41 cases, 53.9%), cerebrovascular disease (10 cases, 13.2%), and cancer (9 cases, 11.8%). Annual mortality ranged from 2.80/100,000 to 12.50/100,000, with YLL

rates of -0.250‰ to 1.436‰. YLL rates exceeded 0 in 10 of 11 years, indicating that community severe mental illness patients' lifespans fall below average life expectancy. Higher YLL rates indicate greater years of life lost due to severe mental illness and substantial disease burden. Research analyzing health status across 34 Chinese provincial-level units found mental disorders ranked second among chronic diseases in disease burden and were among the top three causes of years of life lost [19]. This suggests community mental health work should implement full-course, comprehensive management, addressing not only psychiatric symptom control and social function recovery but also somatic disease progression. Mental health prevention doctors should establish consultation-liaison systems with general practitioners at the community level to guide standardized health examinations, increasing examination frequency for elderly patients $ $60 years with mental disorders, promptly referring patients with comorbid somatic diseases to general practitioners, and implementing early health education to correct unhealthy lifestyles. Regarding suicide, prevention doctors should conduct more comprehensive and detailed follow-up assessments, collecting information from multiple sources (community, neighbors, family) when necessary to identify suicide risk factors early and enable timely intervention.

National epidemiological survey data from 2019 showed weighted lifetime prevalence of 0.6% [95%CI (0.1%, 1.0%)] for schizophrenia and 0.6% [95%CI (0.4%, 0.7%)] for bipolar disorder [9]. Our results show that annually from 2011–2021, newly registered community patients exceeded deaths, with prevalence rising gradually after 2012 to 3.77‰ in 2021, surpassing Beijing's average of 3.6‰ [10]. This increase may relate to strengthened national monitoring and management of severe mental illness [3] and gradually improved community prevention systems with higher detection rates [11]. However, this trend also suggests community mental illness is becoming more severe, warranting attention and targeted prevention measures from community mental health workers.

Comparison between 2021 and baseline revealed: (1) Schizophrenia and bipolar disorder remained the top two conditions among the six categories, but schizophrenia proportion decreased while bipolar disorder increased; (2) Age distribution showed overall aging compared with baseline; (3) Education levels were higher than baseline; (4) Employed patients increased relative to baseline. These changes suggest that over 11 years, bipolar disorder patients increased substantially, with new patients trending older, more educated, and more likely to have employment capacity—offering some hope for recovery. However, moderate education levels (middle school: 63.66%) and unemployment (53.41%) remained dominant without significant change, indicating the observed changes had limited impact on overall demographic distribution, requiring cautious interpretation. Additionally, with unchanged first-onset age but increased age at community registration, greater community screening and mobilization efforts remain needed.

In summary, this study examined newly registered and deceased severe mental illness patients from 2011–2021, finding: (1) Prevalence increased gradually

over the past decade starting in 2012; (2) Schizophrenia and bipolar disorder remained the top two conditions, but bipolar disorder increased markedly over 11 years, with more elderly, educated, and employable patients; (3) Short non-registration periods ($ $5 years) increased among new patients compared with baseline; (4) Deaths were dominated by elderly patients with somatic diseases, with community patients' lifespans below average life expectancy. Targeted recommendations include: multi-sector community collaboration to slow prevalence increases; implementing "early detection, early diagnosis" principles to shorten non-registration periods and ensure earlier access to community mental health services; and for elderly patients, increasing health examination frequency and establishing mental health prevention doctor-general practitioner consultation systems where feasible.

Study limitations: (1) Data came from a single community, limiting generalizability—future research should include multiple communities across urban and rural areas; (2) Annual data analysis revealed no differences between years or trend changes in new/deceased patient characteristics, possibly due to small sample size—future studies should expand sample sizes.

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Author Contributions

SUN Xuhai conceptualized the study, collected data, and drafted and revised the manuscript; SHI Xiuxiu processed and analyzed data; ZHAO Zhengzheng participated in data collection and literature review; HAN Jinxiang established the overall research objectives and reviewed the manuscript; all authors approved the final manuscript.

Conflict of Interest Statement: The authors declare no conflicts of interest.

Received: November 16, 2022; **Revised:** March 22, 2023; **Accepted:** [Epub ahead of print]

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DOI: 10.12114/j.issn.1007-9572.2022.0759

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