Overview

Epidemiological Study of Mental Disorders in China

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In China, the epidemiological study on mental disorders is a great achievement. The criteria of ICD-10 and DSM-IV are applied in both clinical practice and research in China all the time. Using ICD-9 and DSM-III, the early large scale epidemiological studies on mental disorders were carried out in 1982 and 1993. In the 1982 survey, the overall point prevalence and the lifetime prevalence of all mental disorders from 12 study areas were 1.05% and 1.27%, respectively. In the 1993 survey, the point prevalence and lifetime prevalence of all mental disorders from seven areas were 1.12% and 1.35%, respectively. In recent 10 years, CIDI and SCID have been utilized in epidemiological studies in China and obtained different prevalences of mental disorders using different methodologies in different regions. In 2002, the World Mental Health Survey was conducted in urban Beijing and Shanghai using CIDI. The 12-month prevalence estimate of any disorder was 7.0% without psychotic disorders in the sample of 2,633 in Beijing and 2,568 in Shanghai. The latest survey was a cross-sectional study in 2,469 residents aged 16 and over in Beijing. The 30-day, 12-month, and lifetime prevalences of mood disorder were 0.87%, 3.40% and 6.55%. Those of anxiety disorders were 3.08%, 3.90%, and 6.37%. Those of substance abuse/dependence disorders were 0.37%, 1.92% and 5.58%. Furthermore, it should be put in priority to study disease burden of mental disorder after many cross-sectional regional and nationwide studies.

Key words: mental disorders, prevalence, Composite International Diagnostic Interview (WMH-CIDI), Structured Clinical Interview for DSM (SCID)


Introduction

China is currently the most populated country in the world. In the new century, prevalences and characteristics of mental disorders are found to be changing with social and economical development in China. Life style and stress may play an important role for the changes.

An achievement has been made in epidemiological study on mental disorders in China because of improved methodology and government’s paying attention to mental health. Most epidemiological researchers of 1980s and 1990s...
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in China were clinical psychiatrists. Now, more and more epidemiologists, statisticians, socialists, and economists participate in doing psychiatric epidemiological study on mental disorders. In the past, The Ninth Edition of International Classification of Diseases (ICD-9) and The Third Edition of Diagnostic and Statistical Manual of Mental Disorders (DSM-III) were applied for the diagnoses of mental disorders. Now ICD-10 and DSM-IV are commonly used in clinical practice and research. In the last century, non-structured questionnaires as the research instruments, were used by psychiatrists. In the recent ten years, full structured and semi-structured interview assessments have been widely applied. In studying methodology, clued investigation and non-renormalized were main methods in the past. But only strict epidemiological principle and methodology are used by psychiatric epidemiologists now, so that advanced quality control can be administrated. In data analysis, modern epidemiological and statistical principles and methods are used for univariate and multivariate analysis. Better designs, measurements, and evaluations as well as advanced instruments have been used, to obtain more systematic data of mental disorders in China since 2000.

Criteria of Mental Disorders and Instruments Used in China

International Classification of Diseases, Tenth Edition (ICD-10)

At present, the Ministry of Health in China mandates the use of ICD-10 in clinical practice.

Diagnostic and Statistics Manual of Mental Disorder, Fourth Edition (DSM-IV)

American Psychiatric Association’s DSM-IV is more commonly used in research in China. For classification of mental disorders, there are two kinds of disorders, i.e. psychotic disorders and non-psychotic disorders. The former includes schizophrenia, affective disorder, paranoid disorder, reactive psychosis, and organic brain mental disorders. The latter includes anxiety disorder, personality disorder, substance use disorder, eating disorder, somatic disorder, mental retardation, reactive state, and emotional response.

Composite International Diagnostic Interview (WMH-CIDI)

The World Health Organization World Mental Health’s Composite International Diagnostic Interview (WMH-CIDI) is administered by trained lay interviewers, to offer a panoramic, fully structured diagnostic assessment based on DSM-IV [3]. Diagnoses of mental disorders are based upon the WMH-CIDI assessment and computerized diagnostic algorithm. The Chinese Version of the WMH-CIDI was derived using standard protocols of literative translation, back translation, and harmonization conducted by panels of bilingual experts. A clinical reappraisal shows good evidence of CIDI validity in the context of Chinese culture [1].

Structured Clinical Interview for DSM (SCID)

Structured Clinical Interview for DSM (SCID) is a semi-structured clinical assessment instrument to be used by trained psychiatrists. In the past decade, psychiatric doctors and nurses as interviewers used SCID in psychiatric epidemiological surveys routinely in China. Now, only some high-quality epidemiological studies are using SCID for standardized criteria to generate diagnoses.
Two Large-scale Psychiatric Epidemiological Surveys in China

In China, there have been two large scale epidemiological surveys of mental disorders in the previous 30 years. The first survey was conducted in 1982 in 12 regions, and the second one was done in 1993 in seven regions [2].

The first 1982 psychiatric survey in 12 regions

The 1982 12-region survey, sponsored by the Ministry of Health of China and supported by the World Health Organization, was completed through a large-scale collaborative effort of the 12 psychiatric participating study centers. Twelve centers units were chosen to represent different geographical regions and socio-cultural groups of the country. Each study center studied 500 rural and 500 urban samples of households, to collectively form 12,000 households with 51,982 persons (38,136 of them being over the age of 15 years). A survey team member in each of the 12 centers, consisted of both senior and junior psychiatrists, general medical doctors, psychiatric nurses, and medical assistants. The survey instruments included the Psychosis Screening Schedule (10 items), the PSE-9 Neurosis Screening Schedule (12 items), the PSE-9 (Chinese version), the Social Disability Screening Schedule (SDSS), the Household and Socio-demographic Information Schedule, the General Psychiatric Interview Schedule and Summary Form, and the Assessment Schedule for Children (ASC-40). Subjects aged over 14 years who were given a positive rating on either of the two questions in the Psychosis Screening Schedule were regarded as possible cases. They were seen individually for a further clinical assessment using the criteria and definition of the ICD-9.

The survey results showed that the overall point prevalence of all mental disorders in the 12-study areas was 1.05%, and that the lifetime prevalence was 1.27%. The point prevalence of schizophrenia was estimated as 4.75‰ in the population, and the lifetime prevalence was 5.69‰. The point prevalence of schizophrenia, in urban areas and was 6.06 per 1,000, and that in rural areas was 3.42 per 1,000. The point prevalence of manic-depressive psychosis was 0.37‰ and the lifetime prevalence was 0.76‰. One-fifth of all survey respondents were screened for neurosis, which was estimated to have an overall prevalence of 2.22%, including the neurasthenic (1.30%), hysterical (0.36%) depressive (0.31%), anxiety (0.15%), phobic (0.06%), obsessive and compulsive (0.03%), and hypochondriacal (0.02%) subtypes. According to the government’s needs, the survey was focused on prevalences of psychotic disorders as well as moderate and severe mental retardation.

The survey also studied correlates of mental disorders and found, most notably, that schizophrenia was associated with substantial social disability. Despite the low prevalences, the results of the survey were important for planning and developing national mental health services in China. Further, carrying out the survey was instrumental in introducing the methodology of modern epidemiological psychiatry in community settings to Chinese psychiatrists [4, 5].

The second 1993 psychiatric survey in seven regions

Under the leadership of the Ministry of Health, the seven-region epidemiological survey of mental disorders was completed in 1993 in seven of the same 12 regions examined in 1982. Like the earlier 1982 survey, this survey was also supported by the WHO. The study methods and pro-
Procedures were similar to those used in the first 1982 survey. But those added were several new instruments including the Negative Symptom Assessment Scale, the Wechsler Intelligence Scale for Children (WISC), the Adult Intelligence Disability Assessment Instrument, the Chinese Classification of Mental Disorders-Second Version (CCMD-2), ICD-10 and the instruments as well as tables used in the International Collaboration Research for Schizophrenia.

As in the 1982 survey, each participating study center studied both rural and urban samples of 500 households each. The final obtained total samples were 7,000 households with 23,333 persons.

The survey results showed that the overall point prevalence of mental disorders (excluding neurosis by original design of the survey) in the seven study areas was 1.12% and the lifetime prevalence was 1.35%. Of all the mental disorders, the prevalence of schizophrenia was the highest, with a point prevalence of 5.31‰ and a lifetime prevalence of 6.55‰. The prevalence of mental retardation was 2.70‰, which was the second most prevalent disorder studied. Manic-depressive psychosis was ranked the third in prevalence with point prevalence being 0.52‰ and lifetime prevalence 0.83‰. The prevalence of alcohol dependence was 0.68‰, which was significantly higher than that in the 1991 12-region survey. The prevalence of Alzheimer’s disease was 0.36‰.

Regional Epidemiological Psychiatric Surveys in China

Epidemiological surveys of mental disorders in Shandong Province

Two provincial surveys of mental disorders were carried out in 1984 and 1994 in the Shandong province by the Shandong Center for Mental Health. The surveys used the same instruments and procedures as in the two large-scale surveys described previously. The sample of the 1984 Shandong survey comprised 29,492 households, with 118,998 persons (88,822 of them being over the age of 15 years). For the 1994 survey, the sample contained 26,460 households with 84,767 persons (67,901 of them being over the age of 15 years).

The results of the 1984 survey showed that the overall lifetime prevalence of all mental disorders in the Shandong province was 0.98% while the point prevalence 0.91%. The 1994 survey, showed that overall lifetime and point prevalences of all mental disorders in the Shandong province were 1.32% and 1.22%, respectively. Thus, both lifetime and point prevalences were higher than in the 1984 survey. The prevalence of alcohol dependence was increased to 0.98 per 1,000, and the prevalence of neurosis was increased to 0.89‰. There was no statistical difference in the prevalence of organic psychosis between the 1984 and 1994 surveys.

Epidemiological surveys of mental disorders in Shenzhen City

In 1996, an epidemiological survey of mental disorders was carried out in the Shenzhen city using the same instruments and procedures as in the two large-scale surveys that took place in 1982 and 1993. The Shenzhen survey investigated a rural and an urban sample of 500 households each, totaling 3,807 persons. The overall point prevalence of all mental disorders (except neurosis) among persons aged 15 years or above was estimated at 1.48%, while lifetime prevalence was estimated at 1.62%. The prevalence of schizophrenia (4.72 per 1,000 population) was the highest among all of the mental disorders, followed by substance-related disorders (4.38 per 1,000), or-
organic psychosis (4.05 per 1000), moderate and severe mental retardation (2.36 per 1,000) as well as mood disorders (0.34 per 1,000) [8]. Using CIDI-3.1, 7,134 people were interviewed in 2005. The lifetime prevalence of mental disorders was reported at 21.17%. The highest prevalence was depressive disorder (6.71%), followed by obsessive-compulsive disorder (4.18%), psychotic disorder (1.46%), mania (1.14%), phobia disorder (0.92%), bipolar disorder (0.91%), general anxiety disorder (0.39%), and panic disorder (0.38%) [9].

**The Chinese World Mental Health (WMH) Survey Initiative**

At the beginning of 2000s, China took part in the WHO's World Mental Health (WMH) Survey Initiative (www.hcp.med.harvard.edu/wmh). The survey was carried out in urban Beijing and Shanghai. Standardized methods of sampling, training, field procedures, and measures were adopted. The aim was to re-examine the Chinese epidemiology of mental disorders in a cross-national context, and to generate a sample of respondents who could participate in further methodological research after refining the interview methods in preparation for a national survey.

The survey used the WHO-CIDI 3.0. Disorders include DSM-IV anxiety, mood, impulse-control, and substance abuse/dependence disorders. CIDI organic exclusion rules were applied in making all diagnoses. The CIDI was translated into Chinese and back-translated using a standard WHO protocol. An expert panel made up of three academic psychiatrists (Yucun Shen, Mingyuan Zhang, and Shuran Li) and a survey methodologist (Mingming Shen) from the Research Center for Contemporary China in Beijing, evaluated its content validity, tested it with Chinese patients, and revised it taking account of the cross-cultural equivalence of items.

The subjects were urban dwellers who met these criteria: (A) being adults aged 18 to 70 years, (B) living in a family household, (C) having formally registered in a non-agricultural household, and (D) residing within the urban districts of Beijing and Shanghai. Neighborhood committees (NCs) which are established as community organizations in urban China, were used as the pre-selected primary sampling units. The sampling team first approached 50 NCs in each city to check their actual conditions against the obtained demographic data. Totally, 47 of these NCs in Beijing and 44 of them in Shanghai were chosen for the survey. According to the pre-decided sampling interval and random starting points, the desired number of households was sampled from the household registration list in each NC. In Beijing there were 4,024 eligible individuals that comprised the final master sample of respondents, while 3,856 respondents were chosen in Shanghai. The desired sample size was 2,500 completed interviews in each city. The actual sample size was 2,633 in Beijing, and 2,568 in Shanghai. The response rates were 74.8% and 74.6%, respectively. Weights were applied to the data to adjust for discrepancies between the sample and population census data on the cross-classification of key socio-demographic variables. The field managers conducted a one-day training session for field samplers in those two cities following their standard on-site training procedure, and conducted a seven-day training for the interviewers in each city following their standard on-site training procedures.

The demographic distribution of the weighted sample in Beijing is similar to that of Shanghai. The demographic distribution of the combined and weighted sample is similar to the population on post-stratification variables after being weighted. The disorders with highest estimated 12-month prevalence are major depressive disorder (2.0%),

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specific phobia (1.9%), and intermittent explosive disorder (1.7%). In diagnostic class of disorder, impulse-control disorders are estimated to be the most prevalent (3.1%), followed by anxiety disorders (2.7%), mood disorders (2.2%), and substance use disorders (1.6%). The twelve-month prevalence estimate of any disorder is 7.0% in the total sample. Among all respondents with 12-month disorders, 13.9% are classified serious, 32.6% moderate, and 53.5% mild. The distribution of severity across classes of disorder is different from the distribution of prevalence, with mood disorders having the highest percent of cases classified serious (21.4%) and impulse-control disorders the lowest (5.6%). Individual disorders within each class with the highest percent of seriousness are bipolar I-II disorders (100.0%) among the mood disorders, alcohol dependence (54.6%) among the substance disorders, social phobia (24%) among the anxiety disorders, and intermittent explosive disorder (4.9%) among the impulse-control disorders. Inter-city comparison showed that 12-month prevalences of most disorders were not significantly different except for social phobia (Beijing: 0%, Shanghai: 0.3%); intermittent explosive disorder (Beijing: 2.6%, Shanghai: 0.6%); alcohol abuse/dependence (Beijing: 2.5%, Shanghai: 0.4%); and alcohol dependence (Beijing: 0.8%, Shanghai: 0.3%) [10].

**Regional surveys in China**

Since 2001, there have been some regional epidemiological studies funded by local governments. In the Zhejiang province, 14,639 people of 15 years of age or older were investigated using SCID, and the adjusted prevalence of all mental disorders has been estimated at 17.3% [11]. In the Hebei province, 24,000 people of 18 years of age or older were investigated, and the prevalence of all mental disorders of 16.24% has been reported [12]. In the Kunming city, 5,033 rural and urban residents were interviewed by means of CIDI-2.1, showing a 12-month prevalence of 41% [13]. Using CIDI-3.0, adjusted prevalence of mood disorders, psychotic disorders, anxiety disorders, and substance abuse/dependence disorders has been reported in 2006 at 4.33%, and the lifetime prevalence at 15.76% in the Guangzhou city [14].

**Latest epidemiological surveys in Beijing**

To investigate the prevalence, comorbidity and onsets of mood disorder, anxiety disorder and substance abuse/dependence disorder in Beijing, a cross-sectional study was carried out in 2010 in 3,387 residents aged 16 years and over in Beijing using multiple stage stratified sampling [15]. The CIDI-3.0 Computer-assisted Personal Interview (CAPI) was administrated using face-to-face interview for DSM-IV diagnoses in both urban and rural community settings. There were 2,469 respondents in the survey with 72.9% of response rate. Table 1 summarized the finding of the 12-month prevalence and severity of non-psychotic disorders of DSM-IV in Beijing [15]. Since the tool used in this study is based CIDI-3.0, which is based on DSM-IV [1, 3].

**Prevalence of mood disorders**

The 30-day sex-and-age adjusted prevalences of mood disorders are 0.81% and 0.87%, respectively; the 12-month sex-and-age adjusted prevalences of mood disorders are 3.32% and 3.40%, respectively; and lifetime sex-and-age adjusted prevalences of mood disorders are 7.21% and 6.55%, respectively [15]. The adjusted 30-day, 12-month, and lifetime prevalences in male and female are 0.80% vs. 0.76%, 3.28% vs. 2.83%, and 5.86% vs. 5.89%, respectively [15].
Table 1. Summary of the 12 month prevalence and severity prevalence of non-psychotic disorders of DSM-IV* in Beijing [15]

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>12 month</th>
<th>Serious</th>
<th>Moderate</th>
<th>Mild</th>
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<tr>
<td></td>
<td>%</td>
<td>%</td>
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<td>0.2</td>
<td>10.0</td>
<td>64.0</td>
<td>26.0</td>
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<td>0.8</td>
<td>3.7</td>
<td>59.9</td>
<td>36.4</td>
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<td>1.9</td>
<td>17.7</td>
<td>42.2</td>
<td>40.0</td>
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<tr>
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<td>0.2</td>
<td>24.0</td>
<td>44.4</td>
<td>31.7</td>
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<td>Agoraphobia without panic</td>
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<td>Post-traumatic stress disorder</td>
<td>0.2</td>
<td>0.0</td>
<td>90.5</td>
<td>9.5</td>
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<tr>
<td>Obsessive-compulsive disorder</td>
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</tr>
<tr>
<td>Any anxiety disorder</td>
<td>2.7</td>
<td>14.1</td>
<td>44.6</td>
<td>41.3</td>
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<td>Mood disorders</td>
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<tr>
<td>Major depressive disorder</td>
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<td>16.5</td>
<td>51.1</td>
<td>32.4</td>
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<td>100.0</td>
<td>0.0</td>
<td>0.0</td>
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<tr>
<td>Any mood disorder</td>
<td>2.2</td>
<td>21.4</td>
<td>48.6</td>
<td>29.9</td>
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<td>Impulse disorders</td>
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<tr>
<td>Oppositional-defiant disorder</td>
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<tr>
<td>Conduct disorder</td>
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<td>Attention deficit disorder</td>
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<td>Intermittent explosive disorder</td>
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<td>69.4</td>
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<td>3.1</td>
<td>5.6</td>
<td>24.3</td>
<td>70.2</td>
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<td>Substance use disorders</td>
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<td></td>
<td></td>
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<tr>
<td>Alcohol abuse or dependence</td>
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<td>22.0</td>
<td>18.1</td>
<td>59.9</td>
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<tr>
<td>Alcohol dependence</td>
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<td>54.6</td>
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<tr>
<td>Any substance use disorder</td>
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<td>21.3</td>
<td>18.1</td>
<td>60.6</td>
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<tr>
<td>Any disorder</td>
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<tr>
<td>Any</td>
<td>7.0</td>
<td>13.9</td>
<td>32.6</td>
<td>53.5</td>
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<tr>
<td>0 Disorders</td>
<td>93.0</td>
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<td>1 Disorder</td>
<td>5.4</td>
<td>9.3</td>
<td>27.7</td>
<td>62.9</td>
</tr>
<tr>
<td>2 Disorders</td>
<td>0.9</td>
<td>35.4</td>
<td>28.2</td>
<td>36.4</td>
</tr>
<tr>
<td>3+ Disorders</td>
<td>0.7</td>
<td>23.4</td>
<td>76.6</td>
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</table>

*DSM-IV, The Fourth Edition of the Diagnostic and Statistical Manual of Mental Disorders
Adapted from China Mental Health Journal (Beijing) [15]

Prevalence of anxiety disorders

The 30-day sex-and-age adjusted prevalences of anxiety disorders show 3.16% and 3.08%, respectively; 12-month sex-and-age adjusted prevalences of anxiety disorder of mood disorder are 3.93% and 3.90%, respectively; and lifetime sex-and-age adjusted prevalences are 5.95% and 6.37%, respectively [15]. The adjusted 30-day,
12-month and lifetime prevalences in male and female are 2.18% vs. 3.17%, 2.69% vs. 4.18%, and 4.57% vs. 6.55%, respectively [15].

**Prevalence of substance use disorders**

The 30-day sex-and-age adjusted prevalences of substance abuse/dependence disorders are found to be 0.33% and 0.37%, respectively; 12-month sex-and-age adjusted prevalences of substance abuse/dependence disorders are 1.15% and 1.92%, respectively; and lifetime sex-and-age adjusted prevalences of substance abuse/dependence disorders are 5.30% and 5.58%, respectively [15]. The adjusted 30-day, 12-month, and lifetime prevalences of substance use disorders in male and female are 0.63% vs. 0.16%, 3.63% vs. 0.16%, and 11.14% vs. 0.61%, respectively [15].

There were comorbidity among mood disorders, anxiety disorders and substance disorders. In China, the median onset age for anxiety disorders is found to be 15 years of age, following by 28 years of age for substance abuse/dependence disorders, and 38 years of age for mood disorders [15].

**Conclusion**

Because of various methodological differences, the findings of the above-noted studies cannot readily be compared to those of recent epidemiological studies conducted in Western communities. Some of the results, such as those involving schizophrenia, are quite similar to those in overseas studies using similar methods of assessment, while other results, most notably those involving the prevalence of psychotic and mood disorders are markedly different. The consistency of results in psychotic disorders is thought of the view that biological causes are dominant in these disorders, and that the biological vulnerability is relatively stable throughout the world. The variability in the prevalence estimates of non-psychotic disorders, in comparison, argues that cultural factors that differ across cultures play a more important role in these disorders.

Because of differences of diagnostic criteria and instruments, the study results cannot be compared directly. These findings above can be interpreted in several ways. First, because both the DSM and ICD diagnostic systems were developed by American and European psychiatrists based on Western cultures, the diagnostic categories in these systems might not be valid cross-culturally. Second, the evolving nature of diagnosis and classification of mental disorders makes it difficult to compare results across different surveys carried out using different methodologies and diagnostic criteria. Third, genuine differences exist in the cross-national distribution of mental disorders relating to genetic and environmental etiological factors. Debates about these issues have created both enthusiasm and controversy among psychiatrists, psychologists, neurologists, epidemiologists, sociologists, and anthropologists as well among as governmental officers and policy makers in many countries [16].

Many researchers have reservations about the Chinese findings because epidemiological studies of Chinese people do not indicate that mental disorders are as rare as the surveys in 1950’s. Two kinds of explanation, albeit empirically little examined and debated, have been offered for the low prevalence estimates in the surveys. The first kind is to stress on methodological factors that lead to downward bias in estimates, including errors in sampling, stigma-induced under-reporting, and culturally shaped symptom reporting such as somatization. The second kind is to emphasize substantive processes that cause prevalence to be genuinely low, such as a resilient family system and a cultural tradition of with-
standing hardship that buffer Chinese people against mental disorders [17].

In summary, epidemiological surveys on mental disorder in China provide useful evidences of relationship of biological, genetic, social, economic, and demographic effects on mental disorders. It will definitely be beneficial to medical and social researchers as well as governmental officers and policy makers.

References


