Prevalence of mental disorders in China: a cross-sectional epidemiological study

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Summary

Background The China Mental Health Survey was set up in 2012 to do a nationally representative survey with consistent methodology to investigate the prevalence of mental disorders and service use, and to analyse their social and psychological risk factors or correlates in China. This paper reports the prevalence findings.

Methods We did a cross-sectional epidemiological survey of the prevalence of mental disorders (mood disorders, anxiety disorders, alcohol-use and drug-use disorders, schizophrenia and other psychotic disorders, eating disorder, impulse-control disorder, and dementia) in a multistage clustered-area probability sample of adults from 157 nationwide representative population-based disease surveillance points in 31 provinces across China. Face-to-face interviews were done with a two-stage design by trained lay interviewers and psychiatrists with the Composite International Diagnostic Interview, the Structured Clinical Interview for DSM-IV Axis I disorders, the Community Screening Instrument for Dementia from the 10/66 dementia diagnostic package, and the Geriatric Mental State Examination. Data-quality control procedures included logic check by computers, sequential recording check, and phone-call check by the quality controllers, and reinterview check by the psychiatrists. Data were weighted to adjust for differential probabilities of selection and differential response as well as to post-stratify the sample to match the population distribution.

Findings 32 552 respondents completed the survey between July 22, 2013, and March 5, 2015. The weighted prevalence of any disorder (excluding dementia) was 9·3% (95% CI 5·4–13·3) during the 12 months before the interview and 16·6% (13·0–20·2) during the participants' entire lifetime before the interview. Anxiety disorders were the most common class of disorders both in the 12 months before the interview (weighted prevalence 5·0%, 4·2–5·8) and in lifetime (7·6%, 6·3–8·8). The weighted prevalence of dementia in people aged 65 years or older was 5·6% (3·5–7·6).

Interpretation The prevalence of most mental disorders in China in 2013 is higher than in 1982 (point prevalence 1·1% and lifetime prevalence 1·3%), 1993 (point prevalence 1·1% and lifetime prevalence 1·4%), and 2002 (12-month prevalence 7·0% and lifetime prevalence 13·2%), but lower than in 2009 (1-month prevalence 17·5%). The evidence from this survey poses serious challenges related to the high burdens of disease identified, but also offers valuable opportunities for policy makers and health-care professionals to explore and address the factors that affect mental health in China.

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Introduction

In the past 30 years, China—with almost a fifth of the world's population—has undergone unprecedented economic development and social change. This transformation has led to tremendous changes in population structure, urbanisation, migration, education, transportation, culture, leisure, social concepts, and disease epidemiology. Chinese policy makers and health-care professionals have begun to consider mental health an important outcome to monitor. Previous regional surveys[1] showed the prevalence of mental disorders in local areas of China, but the generalisability of these results was limited by inconsistencies in the measures and definitions of disorder. A national mental health survey was needed. It took more than 10 years for Chinese psychiatrists, related professionals, and the Chinese Government to set up the China Mental Health Survey (CMHS). Launched in 2012, the CMHS addressed the limitations of the previous studies by using a consistent methodology to do a nationally representative survey, which relied on coherent diagnostic nomenclature, fully structured diagnostic interviews, and sophisticated household survey technology.[2,3]

The three major aims of the CMHS were to investigate the prevalence of mental disorders; to obtain data about service use of individuals with mental disorders; and to analyse the social and psychological risk factors or correlates of mental disorders and mental health services in China. This Article reports only the prevalence of mental disorders collected by the CMHS. Other results will be reported in subsequent papers.

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For the **China Family Panel Studies** see http://www.isss.pku.edu.cn/cfps/en/index.htm

Research in context

Evidence before this study

We searched PubMed, Elsevier Science, CNKI, and WANFANG MED ONLINE for papers published in English or Chinese from Jan 1, 1980, to Aug 31, 2018 (appendix). We used the search words: mental disorder, mental disease, mood disorder, affective disorder, major depressive disorder, bipolar disorder, anxiety disorder, obsessive-compulsive disorder, post-traumatic stress disorder, substance use disorder, alcohol use disorder, drug use disorder, eating disorder, schizophrenia, psychotic disorder, dementia, impulse-control disorder, prevalence, distribution, incidence, comorbidity, fatality, epidemiology, cross-sectional study, China, Chinese, survey, investigation, sampling, disability adjusted life year, and service use. In 1982, a cross-sectional study funded by the Chinese Ministry of Health was launched in China across 12 study areas in 12 000 households with 51 982 residents, obtaining an overall point prevalence for all mental disorders of 1·05% and a lifetime prevalence of 1·27%. In 1993, a cross-sectional study funded by the Ministry of Health and China Disabled Persons' Federation was launched to cover seven study areas in 7000 households with 23 333 residents, and obtained an overall point prevalence of mental disorders of 1·12% and a lifetime prevalence of 1·35%. The World Mental Health Survey was carried out in urban Beijing and Shanghai, China, in 2002. The estimated lifetime prevalence of any DSM-IV disorder based on the Composite International Diagnostic Interview was 13·2%, and the 12-month prevalence was 7·0% in 5201 respondents. A 2009 epidemiological survey reported a result in four city-provinces of China, that the adjusted 1-month prevalence of any mental disorder was 17·5% in 16 577 respondents. There were no nationwide studies of mental health prevalence in China.

Added value of this study

The Chinese Mental Health Survey is the first national study of mental disorders in China. It used clinical criteria and standard instruments administered by trained lay interviewers for international and cross-cultural comparability. The advantage of the diagnostic nomenclature, fully structured diagnostic interviews, and the application of sophisticated household survey technology produced valid and reliable data showing that the prevalence of mental disorders in 2013 is higher than in previous surveys in China, but lower than most countries from the World Mental Health Survey.

Implication of all the available evidences

Comparisons of our findings with previous studies suggest that there has been an increase in prevalence of non-psychotic disorders whereas the prevalence of schizophrenia and other psychotic disorders has remained stable. The data-driven analysis of the survey and interpretation of the results will contribute substantially to the understanding and management of mental health in China.

Methods

Study design and study population

We used a survey to do a cross-sectional study of the epidemiology of mental disorders in China. The CMHS followed the China Chronic Diseases and Risk Factors Surveillance organised by the Chinese Centre for Disease Control and Prevention (CDC) since 2004, and used the same sampling frame. The survey included community residents of Chinese nationality aged 18 years or older who had resided for at least 6 months over the 12 months preceding the survey at sampled addresses in 31 provinces of China. The sampling frame did not include Hong Kong, Macao, or Taiwan; enclosed communities such as work places, construction sites, armed services, schools, hospitals, or homes for elderly people; residents with hearing loss or who were pregnant at the time of the survey. Pregnant women were excluded from the sampling frame to avoid invasive tests, as the China Chronic Diseases and Risk Factors Surveillance collected blood samples from the respondents.

The sample was obtained by selecting a probability subsample from a nationally representative sample developed for the China Chronic Diseases and Risk Factors Surveillance. The original sample for the chronic-disease surveillance was obtained from the national sampling frame of 54 categories developed by stratifying all counties or districts (excluding Hong Kong, Macao, and Taiwan) on the basis of a combination of four variables: geographic location (east, central, or west), economic developmental level (high, medium, or low), level of urbanisation (rural or urban), and the scale for population size (high, medium, or low) based on national population census data for the year 2010. Sampling followed a tiered process, which included seven levels: county (rural) or district (urban), town (rural) or street (urban), primary village (rural) or community (urban), secondary village (rural) or community (urban), residential group, household, and individual inside each sampled household. Among the original 161 randomly selected counties or districts from the 54 categories, the four from Tibet—where response rates were expected to be very low—were excluded from the CMHS study. All four originally sampled towns or streets in each of the remaining 157 counties or districts were kept in the CMHS sample. Two of the three villages or communities were selected from the original sample for the CMHS study. For the next step, 28–50 households were selected for the CMHS study from the originally determined residential group of 50 households in each sampled village or community, on the basis of the estimated response rate from a previous national representative survey of Chinese communities, families, and individuals (the China Family Panel Studies). Finally, the single individual selected from each sampled household in the original sample was also kept in the CMHS sample.
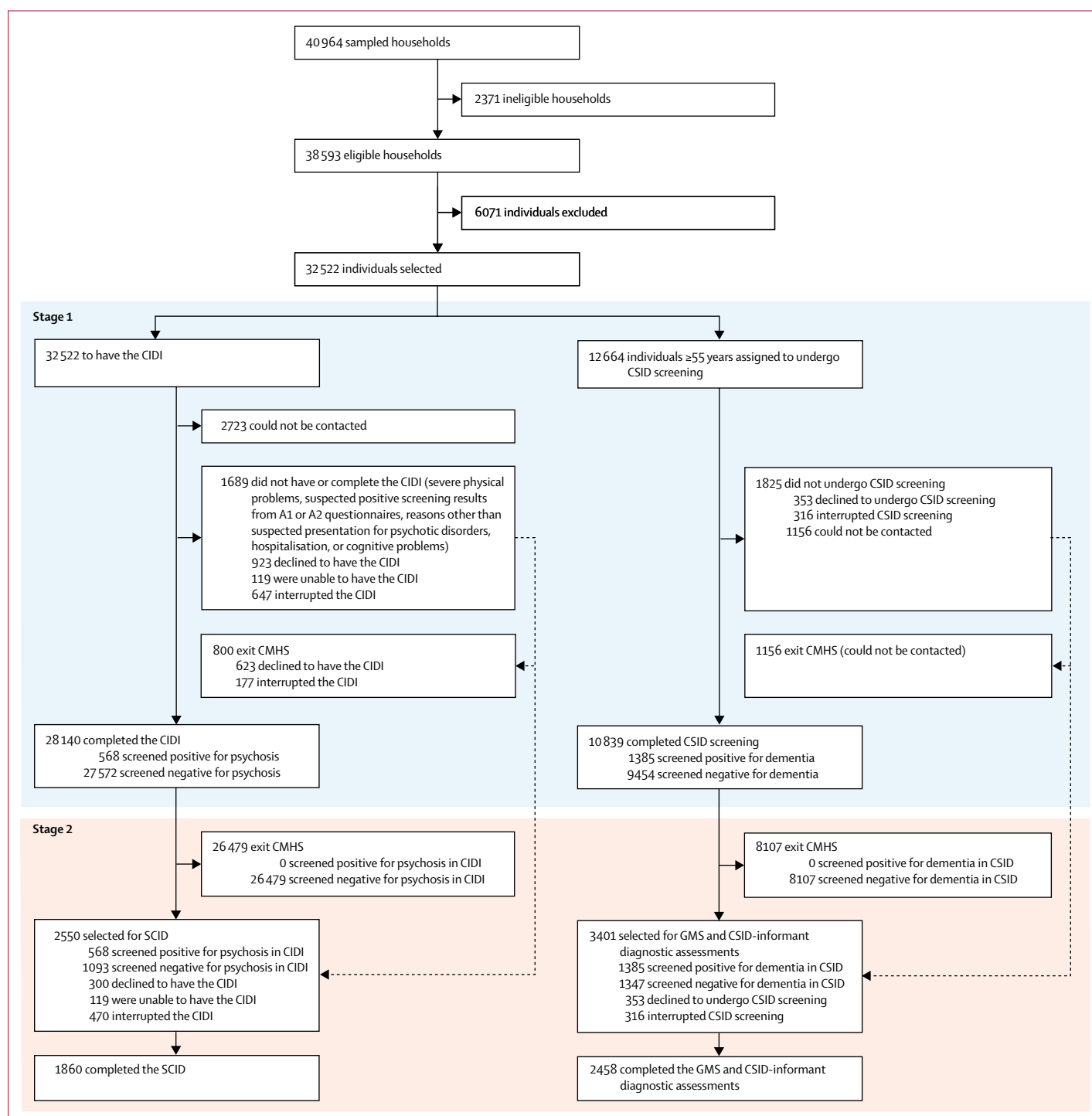
Figure: **Study profile**

In this figure psychosis includes schizophrenia and any other psychotic disorders as defined by DSM-IV. Stage one screening was done by trained lay interviewers; stage two diagnoses were done by qualified psychiatrists. CIDI=Composite International Diagnostic Interview 3.0. CMHS=China Mental Health Survey. CSID=Community Screening Instrument for Dementia. GMS=Geriatric Mental State Examination. SCID=Structured Clinical Interview for DSM-IV Axis I disorders.

To obtain a nationally representative sample for the CMHS study, a sampling strategy proportional to population size was used to sample towns or streets and primary villages or communities; simple random sampling was used for the selection of counties or districts (selected from 54 categories after feasibility was assessed), of secondary villages or communities, of residential groups, and of households; and the Kish

	Frequency, n (%)
Gender	
Male	14 784 (45·4%)
Female	17 768 (54·6%)
Age (years)	
18–34	5625 (17·3%)
35–44	6378 (19·6%)
45–54	7801 (24·0%)
55–64	7338 (22·6%)
65 and over	5326 (16·4%)
Region	
Urban	15 309 (47·0%)
Rural	17 243 (53·0%)

Table 1: Participant demographics (n=32 552)

complete random table was used for random selection of the individual in each household. The detailed sampling methodology used for the CMHS has been described elsewhere.[2,3]

CMHS was approved by the Ethical Committee of the Sixth Hospital of Peking University (IMH-IRB-2013–13–1). All procedures involving human participants were in accordance with the ethical standards of the institutional or national research committee and with the 1964 Helsinki declaration and its later amendments or similar ethical standards. Participants provided their written informed consent for data use. The data of CMHS belong to the National Health Commission (Ministry of Health) of People's Republic of China and are not available for sharing.

Procedures

The survey was structured in two stages: a first stage of screening for psychosis and dementia and of diagnosis of non-psychotic disorders led by trained lay interviewers, and a second diagnostic stage done by qualified psychiatrists.

The first stage of the CMHS was implemented with the fourth wave of the chronic-disease surveillance organised by the National Center for Chronic and Non-communicable Disease Control and Prevention of the Chinese CDC, which guaranteed well organised administrative support. Participants were interviewed by qualified interviewers who had received comprehensive training with computer-assisted personal interviewing techniques. Interviewer pretraining was completed before stage one by a set of training programmes including lectures, practice, and quizzes. After 3 to 5 days training, the trainees had to pass a written examination and simulated-interview examination by the trainers to become interviewers. Data collected included the household questionnaire; the Composite International Diagnostic Interview 3.0 (CIDI); the checklist of reasons for non-response (A1 questionnaire; appendix); the checklist of reasons for interruption (A2 questionnaire;

appendix); and the Community Screening Instrument for Dementia (CSID).

The CIDI is a validated fully structured diagnostic interview designed to be administered by trained lay interviewers to assess the lifetime and 12-month disease status for mood disorders, anxiety disorders, substance-use disorders, impulse-control disorder, and eating disorders (appendix).[4–6] After the CIDI, interviewers sent a sealed letter containing information about consulting a doctor to respondents identified to have high-risk suicidal behaviour.

Participants with positive screening results for psychosis and a random sample of those with negative screening results from CIDI (selected to mirror the proportion of participants with positive screening results) were then assessed for schizophrenia and other psychotic disorders by psychiatrists using the Structured Clinical Interview for DSM-IV Axis I disorders (SCID; appendix).[7,8] Some of the participants who declined or were unable to undergo or interrupted the CIDI (ie, those with suspected presentation for psychotic disorder detected by A1 or A2 questionnaire, who had severe physical problems or cognitive problems, or who were hospitalised) were included in the SCID diagnostic stage. Another random sample of those with negative screening results by A1 or A2 questionnaire (selected to mirror the proportion of participants with positive screening results of A1 or A2 questionnaire) were also included in the SCID diagnostic stage. The rest of the participants who had negative screening results from the A1 or A2 questionnaires were not included in the SCID diagnostic stage.

Dementia was assessed among participants aged 55 years or older with a two-stage approach; all individuals were screened with the CSID from the 10/66 dementia diagnosis package, an assessment tool designed for use by trained lay interviewers. Participants who screened positive for dementia and a matching proportion of randomly chosen participants whose screening results were negative were administered the dementia-diagnosis CSID-informant interview and Geriatric Mental State Examination (GMS) by psychiatrists. Participants aged 55 years or older who declined to be screened for dementia with CSID or interrupted the interviews also received the GMS and the CSID-informant interview diagnostic assessments for dementia.

The wordings of each diagnostic tool were all translated, back translated, and harmonised for local dialects to ensure cultural validity of the assessments.[9,10] The validity and reliability of the Chinese versions of the CIDI, SCID, and CSID screening tools were tested in clinical and community settings in China.[5,6,9,10]

Data were stored in a secured server that only authorised personnel were allowed to access. During both stages of the CMHS, audio recordings made at random by computers during interviews were used only for quality control for data collection and could be accessed on the secure server only by the study supervisors. During stage one, there were four

steps for quality control, the first three of which were also used during stage two. The monitors of the quality control centre did daily computer-based logic checks for item non-response and survey-data outliers. Recording and phone-call checks were made for over 25% of respondents to identify irregular behaviours of the interviewers, such as inaccurate reading of questions, insufficient probing, and imagined answers. Finally, some of the respondents (selected by the quality control team on the basis of sampling accuracy, issues with quality, sampling interruption, or random

	Lifetime prevalence			12-month prevalence		
	Frequency, n	Unweighted % (95% CI)	Weighted % (95% CI)	Frequency, n	Unweighted % (95% CI)	Weighted % (95% CI)
Mood disorders*						
Any mood disorder	2096	7·4% (7·1–7·8)	7·4% (6·3–8·4)	1136	4·0% (3·8–4·3)	4·1% (3·4–4·7)
Depressive disorders	1947	6·9% (6·6–7·2)	6·8% (5·8–7·8)	1007	3·6% (3·4–3·8)	3·6% (3·0–4·2)
Major depressive disorder	1093	3·9% (3·7–4·1)	3·4% (2·9–3·9)	655	2·3% (2·2–2·5)	2·1% (1·8–2·4)
Dysthymic disorder	414	1·5% (1·3–1·6)	1·4% (1·1–1·7)	312	1·1% (1·0–1·2)	1·0% (0·8–1·3)
Depressive disorder not otherwise specified	805	2·9% (2·7–3·1)	3·2% (2·6–3·9)	322	1·1% (1·0–1·3)	1·4% (1·1–1·7)
Bipolar disorders	150	0·5% (0·4–0·6)	0·6% (0·4–0·7)	121	0·4% (0·4–0·5)	0·5% (0·3–0·6)
Bipolar I disorder	106	0·4% (0·3–0·4)	0·4% (0·3–0·5)	91	0·3% (0·3–0·4)	0·3% (0·2–0·5)
Bipolar II disorder	12	<0·1% (0·02–0·1)	<0·1% (0·0–0·1)	10	<0·1% (0·0–0·1)	<0·1% (0·01–0·04)
Bipolar disorder not otherwise specified	32	0·1% (0·1–0·2)	0·1% (0·1–0·2)	20	0·1% (0·0–0·1)	0·1% (0·0–0·1)
Substance-induced mood disorder	2	<0·1% (0·001–0·02)	<0·1% (0·0–0·02)	2	<0·1% (0·001–0·02)	<0·1% (0·001–0·02)
Mood disorder due to a general medical condition	20	<0·1% (0·04–0·10)	<0·1% (0·0–0·10)	17	0·1% (0·0–0·1)	0·1% (0·0–0·1)
Anxiety disorders*						
Any anxiety disorder†	1675	6·1% (5·7–6·5)	7·6 (6·3–8·8)	1164	4·1% (3·8–4·4)	5·0% (4·2–5·8)
Panic attack	149	0·5% (0·4–0·6)	0·5% (0·3–0·6)	97	0·3% (0·3–0·4)	0·3% (0·2–0·4)
Agoraphobia without history of panic disorder	111	0·4% (0·3–0·5)	0·4% (0·3–0·50)	75	0·3% (0·2–0·3)	0·2% (0·2–0·3)
Specific phobia	793	2·8% (2·6–3·0)	2·6% (2·2–3·1)	609	2·2% (2·0–2·3)	2·0% (1·7–2·4)
Social phobia	186	0·7% (0·6–0·8)	0·6% (0·5–0·8)	120	0·4% (0·4–0·5)	0·4% (0·3–0·5)
Obsessive compulsive disorder	622	2·2% (2·0–2·4)	2·4% (2·0–2·9)	410	1·5% (1·3–1·6)	1·6% (1·3–2·0)
Post-traumatic stress disorder†	77	0·4% (0·3–0·5)	0·3% (0·2–0·5)	35	0·2% (0·1–0·2)	0·2% (0·1–0·3)
Generalised anxiety disorder	85	0·3% (0·2–0·4)	0·3% (0·2–0·4)	51	0·2% (0·1–0·2)	0·2% (0·1–0·3)
Substance-induced anxiety disorder	1	<0·1% (0·001–0·01)	<0·1% (0·001–0·01)	0	<0·1%	<0·1%
Anxiety disorder due to a general medical condition	31	0·1% (0·1–0·2)	0·1% (0·0–0·1)	29	0·1% (0·1–0·1)	0·1% (0·0–0·1)
Anxiety disorder not otherwise specified†	203	0·8% (0·7–1·0)	1·0% (0·7–1·2)	65	0·3% (0·2–0·3)	0·4% (0·2–0·5)
Substance-use disorders*						
Any substance use disorder	1104	3·9% (3·7–4·2)	4·7% (4·1–5·3)	387	1·4% (1·2–1·5)	1·9% (1·6–2·3)
Alcohol use disorders	999	3·6% (3·3–3·8)	4·4% (3·8–5·0)	345	1·2% (1·1–1·4)	1·8% (1·5–2·2)
Alcohol dependence	303	1·1% (1·0–1·2)	1·3% (1·0–1·5)	141	0·5% (0·4–0·6)	0·7% (0·5–0·9)
Alcohol abuse	696	2·5% (2·3–2·7)	3·1% (2·6–3·6)	204	0·7% (0·6–0·8)	1·1% (0·9–1·4)
Drug use disorders	117	0·4% (0·3–0·5)	0·4% (0·2–0·5)	44	0·2% (0·1–0·2)	0·1% (0·1–0·2)
Drug dependence	72	0·3% (0·2–0·3)	0·2% (0·1–0·3)	40	0·1% (0·1–0·2)	0·1% (0·1–0·2)
Drug abuse	56	0·2% (0·1–0·3)	0·2% (0·1–0·3)	4	<0·1% (0·001–0·03)	<0·1% (0·001–0·02)
Impulse-control disorders*						
Any impulse-control disorder	391	1·4% (1·3–1·5)	1·5% (1·3–1·9)	290	1·0% (0·9–1·1)	1·2% (0·9–1·5)
Eating disorders*						
Any eating disorder	13	<0·1% (0·02–0·01)	0·1% (0·0–0·1)	5	<0·1% (0·002–0·03)	<0·1% (0·001–0·06)
Anorexia	8	<0·1% (0·01–0·05)	<0·1% (0·001–0·07)	1	<0·1% (0·001–0·01)	<0·1% (0·001–0·004)
Bulimia	5	<0·1% (0·002–0·03)	<0·1% (0·001–0·06)	4	<0·1% (0·001–0·03)	<0·1% (0·001–0·06)

(Table 2 continues on next page)

	Lifetime prevalence			12-month prevalence		
	Frequency, n	Unweighted % (95% CI)	Weighted % (95% CI)	Frequency, n	Unweighted % (95% CI)	Weighted % (95% CI)
(Continued from previous page)						
Schizophrenia and other psychotic disorders‡§						
Schizophrenia or any other psychotic disorder	40	0·9% (0·4–1·5)	0·7% (0·3–1·2)	27	0·7% (0·2–1·3)	0·6% (0·2–1·1)
Schizophrenia	24	0·5% (0·1–1·0)	0·6% (0·1–1·0)	21	0·5% (0·1–0·9)	0·6% (0·1–1·0)
Other psychotic disorders	16	0·4% (0·0–0·8)	0·2% (0·0–0·3)	6	0·2% (0·0–0·5)	0·1% (0·0–0·1)
Schizophreniform disorder	1	<0·1% (0·001–0·01)	<0·1% (0·001–0·01)	0	<0·1%	<0·1%
Schizoaffective disorder	0	<0·1%	<0·1%	0	<0·1%	<0·1%
Delusional disorder	3	0·1% (0·0–0·33)	<0·1% (0·001–0·02)	1	0·1% (0·0–0·3)	<0·1% (0·001–0·01)
Brief psychotic disorder	2	<0·1% (0·001–0·03)	0·1% (0·0–0·2)	0	<0·1	<0·1%
Substance-induced psychotic disorder	2	0·1% (0·0–0·3)	<0·1% (0·001–0·08)	1	<0·1% (0·001–0·01)	<0·1% (0·001–0·05)
Psychotic disorder due to a general medical condition	3	0·1% (0·0–0·3)	<0·1% (0·001–0·08)	3	0·1% (0·0–0·3)	<0·1% (0·001–0·08)
Psychotic disorder not otherwise specified	5	<0·1% (0·0–0·04)	<0·1% (0·001–0·03)	1	<0·1% (0·001–0·01)	<0·1% (0·001–0·002)
Dementia§¶						
Dementia	157	5·9% (4·4–7·3)	5·6% (3·5–7·6)	..	..	..
Any disorders§						
Any disorders (excluding dementia)	4047	15·7% (13·4–18·1)	16·6% (13·0–20·2)	2401	9·7% (7·8–11·6)	9·3% (5·4–13·3)

Prevalence 95% CI could not be calculated when the frequency was equal to 0. CIDI=Composite International Diagnostic Interview 3.0. SCID=structured clinical interview for DSM-IV Axis I disorders. *Prevalence was calculated with a population size of N=28 140 (ie, the number of participants who finished the stage-one interviews). †CIDI is divided into part one (completed by all participants) and part two (completed by a subset of participants; as this disorder involves part two, unweighted prevalence is calculated using probability of selectively entering part two. ‡30-day prevalence is used because SCID can only be used to obtain 30-day prevalence estimates. §These disorders involve stage two of the survey, so unweighted prevalence is calculated using probability of selectively entering stage two. ¶Prevalence of dementia for the population aged 65 years and over (N=5326).

Table 2: **Unweighted and weighted lifetime and 12-month prevalence of mental disorders in China (N=32 552)**

selection) were interviewed again by psychiatrists for face-to-face checking. The proportion of quality-assessed interviews that passed quality testing was measured.

Statistical analysis

The target sample size was determined by assuming that prevalence (p) for schizophrenia, the severe mental disorder expected to have one of the lowest prevalence, would be 0·6%. To achieve a relative error (ε) of 15%, we used the formula,[11]

$$n = \frac{Z^2_{1-\frac{\alpha}{2}}(1-p)}{p\varepsilon^2}$$

which would require the sample size to be roughly 30 000. Based on the assumption of a 75% response rate, this would require us to survey 40 000 individuals.

Lifetime prevalence was estimated for each disorder and for each subcategorical disorder. 12-month prevalence was estimated for the subcategorical mental disorders except for schizophrenia and other psychotic disorders, for which 30-day prevalence was estimated. In the estimation of the 12-month prevalence of any mental disorders, dementia was not included. The unweighted

prevalence estimates were calculated as the ratio between the number of diagnosed participants and the number of all participants who underwent the same diagnostic procedure. Estimations for prevalence were obtained with both unweighted and weighted data by use of SAS 9.4. We estimated SEs of prevalence estimates using the Taylor series linearisation method to adjust for data weighting and clustering. SEs were used to determine the 95% CI for the prevalence estimates.

We estimated the weighted prevalence of mental disorders on the basis of sampling weights, non-response weights, and post-stratification weights. Sampling weights at each level were equal to the reciprocal of the relevant sampling probability.

The combined sampling weight for the first stage was the product of all sampling weights at all seven levels (ie, county or district, town or street, primary village or community, secondary village or community, residential group, household, and individual in each sampled household).

For the second stage, the sampling probability and sampling weights for individuals with all types of positive screening results were all equal to one. For participants with negative screening results or who did not undergo or fully complete the CIDI, the sampling weight was

calculated as the reciprocal of the sampling probability (appendix).

For dementia, the sampling weight was one for those with positive results and the reciprocal of the sampling probability for those with negative screening results.

Non-response weight was estimated as the reciprocal of the proportion of non-response rate, which was estimated with logistic regression models (appendix). Post-stratification weight was estimated on the basis of gender (male or female), age (18–29 years, 30–39 years, 40–49 years, 50–59 years, 60–69 years, or 70 years or older), and level of urbanisation (rural or urban) using data from the sixth national population census of 2010 as the standardised population.[12] Missing data in question-naires for items with low missing rates were imputed with median values observed in the dataset.

Trimming for extreme post-stratification weighs was limited to the 0·01 and 0·99 quantiles. The final weight for each participant was the product of sampling weights, non-response weights, post-stratification weights, and adjustment for extreme weights.

The design-adjusted Rao-Scott χ^2 test was used to test the associations between gender, age, or region and any of the examined mental disorders. We considered a p value of less than 0·05 to be significant.

Role of the funding source
The funders of the study had no role in the study design, data collection, data analysis, data interpretation, or writing of the report. The corresponding author had full access to all the data in the study and had final responsibility for the decision to submit for publication.

	Male		Female		p value (male vs female)
	Frequency	Prevalence % (95% CI)	Frequency	Prevalence % (95% CI)	
Mood disorders					
Any mood disorder	403	3·5% (2·8–4·2)	733	4·6% (3·8–5·4)	0·0071
Depressive disorders	348	3·0% (2·3–3·7)	659	4·2% (3·4–4·9)	0·0034
Major depressive disorder	219	1·7% (1·3–2·1)	436	2·5% (2·0–3·0)	0·0061
Dysthymic disorder	112	1·0% (0·6–1·3)	200	1·1% (0·8–1·4)	0·508
Depressive disorder not otherwise specified	114	1·2% (0·8–1·5)	208	1·6% (1·2–2·0)	0·056
Bipolar disorders	52	0·5% (0·3–0·7)	69	0·4% (0·3–0·6)	0·622
Bipolar I disorder	42	0·4% (0·2–0·6)	49	0·3% (0·2–0·5)	0·574
Bipolar II disorder	3	<0·1% (0·001–0·02)	7	<0·1% (0·004–0·07)	0·048
Bipolar disorder not otherwise specified	7	0·1% (0·0–0·2)	13	0·1% (0·0–0·1)	0·561
Substance-induced mood disorder	2	<0·1% (0·001–0·04)	0	<0·1	NA
Mood disorder due to a general medical condition	5	<0·1% (0·001–0·09)	12	0·1% (0·0–0·1)	0·683
Anxiety disorder					
Any anxiety disorder	459	4·8% (3·7–5·8)	705	5·2% (4·1–6·2)	0·524
Panic attack	40	0·3% (0·1–0·4)	57	0·3% (0·2–0·4)	0·868
Agoraphobia without history of panic disorder	22	0·1% (0·0–0·1)	53	0·4% (0·2–0·6)	<0·0001
Specific phobia	203	1·4% (1·1–1·7)	406	2·6% (2·0–3·1)	<0·0001
Social phobia	48	0·3% (0·1–0·4)	72	0·5% (0·3–0·7)	0·018
Obsessive-compulsive disorder	186	1·6% (1·3–2·0)	224	1·6% (1·2–2·1)	0·862
Post-traumatic stress disorder	16	0·2% (0·0–0·4)	19	0·2% (0·0–0·4)	0·953
Generalised anxiety disorder	21	0·2% (0·1–0·3)	30	0·2% (0·1–0·3)	0·979
Anxiety disorder due to a general medical condition	11	<0·1% (0·0–0·1)	18	0·1% (0·0–0·1)	0·401
Anxiety disorder not otherwise specified	28	0·3% (0·1–0·6)	37	0·4% (0·1–0·6)	0·897
Substance use disorders					
Any substance use disorder	342	3·6% (2·9–4·2)	45	0·3% (0·1–0·4)	<0·0001
Alcohol use disorders	332	3·5% (2·9–4·2)	13	0·1% (0·0–0·2)	<0·0001
Alcohol dependence	133	1·3% (1·0–1·7)	8	<0·1% (0·01–0·06)	<0·0001
Alcohol abuse	199	2·2% (1·7–2·7)	5	0·1% (0·0–0·2)	<0·0001
Drug use disorders	12	0·1% (0·0–0·1)	32	0·2% (0·1–0·2)	0·033
Drug dependence	10	0·1% (0·0–0·1)	30	0·2% (0·1–0·2)	0·030
Drug abuse	2	<0·1% (0·001–0·03)	2	<0·1% (0·001–0·01)	0·327

(Table 3 continues on next page)

	Male		Female		p value (male vs female)
	Frequency	Prevalence % (95% CI)	Frequency	Prevalence % (95% CI)	
(Continued from previous page)					
Impulse-control disorders					
Any impulse-control disorder	177	1·7% (1·2–2·1)	113	0·8% (0·5–1·0)	<0·0001
Eating disorders					
Any eating disorder	4	<0·1% (0·001–0·05)	1	<0·1% (0·001–0·10)	0·639
Anorexia	1	<0·1% (0·001–0·01)	0	<0·1	NA
Bulimia	3	<0·1% (0·001–0·04)	1	<0·1% (0·001–0·10)	0·573
Schizophrenia and other psychotic disorders*					
Schizophrenia or any other psychotic disorders	13	0·7% (0·0–1·4)	14	0·5% (0·0–1·1)	0·656
Schizophrenia	9	0·6% (0·0–1·3)	12	0·5% (0·0–1·1)	0·795
Other psychotic disorders	4	0·1% (0·0–0·2)	2	<0·1% (0·001–0·04)	0·046
Delusional disorder	1	<0·1% (0·001–0·02)	0	<0·1	NA
Substance-induced psychotic disorder	1	<0·1% (0·001–0·10)	0	<0·1	NA
Psychotic disorder due to a general medical condition	2	0·1% (0·0–0·2)	1	<0·1% (0·001–0·04)	0·226
Psychotic disorder not otherwise specified	0	<0·1	1	<0·1% (0·001–0·003)	NA
Dementia†					
Dementia	63	5·8% (2·2–9·4)	94	5·3% (3·0–7·6)	0·811
Any disorders					
Any disorders (excluding dementia)	1102	9·7% (5·0–14·3)	1299	9·0% (3·9–14·1)	0·823

Prevalence 95% CI could not be calculated when the frequency was equal to 0. NA=not applicable. SCID=structured clinical interview for DSM-IV Axis I disorders. *30-day prevalence is used because SCID can only obtains diagnoses of 30-day prevalence. †Prevalence of dementia for the population aged 65 years and over.

Table 3: Weighted 12-month prevalence of mental disorders by gender in China (N=32 552)

Results

The sample population of our survey was randomly distributed in 157 counties or districts, 628 towns or streets, 1256 villages or communities, and 40 964 household addresses. Of these households, 2371 were not eligible because they were empty or had an invalid address. From July 22, 2013, to Sept 21, 2014, 32 552 (84·4%) individuals from the 38 593 eligible households were interviewed by 824 qualified interviewers for the first stage of the CMHS (figure). 14 784 (45·4%) respondents were men and 17 768 (54·6%) were women (table 1). From Sept 27, 2013, to March 5, 2015, 83 trained and qualified psychiatrists delivered the SCID, CSID-informant interview, and GMS for stage two of the CMHS. The proportion of interviews that passed the quality check was between 90·9% and 99·9% at stage one, and between 90·1% and 100% at stage two.

568 (1·7%) of 32 552 respondents who screened positive for psychosis on the CIDI and 1093 (3·4%) who screened negative entered stage two for the diagnosis for psychosis and had the SCID. Participants who declined to have (n=300, 0·9%), were unable to undergo (n=119, 0·4%), or interrupted (n=470, 1·4%) the CIDI interviews because of self-reported severe physical problems, suspected positive screening results due to mental health problems, reasons other than suspected presentation for schizophrenia and other psychotic disorders, severe physical disorders, hospitalisation, or cognitive problems were also included in the SCID diagnostic phase (figure).

12 664 respondents were aged 55 years or older. Of 10 839 respondents who were screened with the CSID, 1385 (12·8%) who screened positive and 1347 (12·4%) who screened negative were evaluated in stage two for the diagnosis of dementia. Of the 1825 respondents who did not undergo the CSID screening, 353 (19·3%) respondents who declined the CSID screening interview and 316 (17·3%) individuals who interrupted the interviews were evaluated in stage two for diagnosis of dementia (figure).

Weighted lifetime prevalence of any disorder excluding dementia was 16·6% (95% CI 13·0–20·2), and 14·6% (11·0–18·1) excluding any disorder not otherwise specified and dementia. Anxiety disorders were the most prevalent class of lifetime disorders (7·6%), followed by mood disorders (7·4%), substance-use disorders (4·7%), impulse-control disorders (1·5%), schizophrenia and other psychotic disorders (0·7%), and eating disorders (0·1%; table 2).

Weighted 12-month prevalence of any disorder excluding dementia was 9·3% (95% CI 5·4–13·3), and 8·0% (4·1–11·9) excluding any disorder not otherwise specified and dementia. The same pattern was shown for sub-categorical disorders as for lifetime prevalence (table 2).

	18–34 years		35–49 years		50–64 years		≥65 years		p value (prevalence vs age)
	Frequency, n	Prevalence % (95% CI)	Frequency, n	Prevalence % (95% CI)	Frequency, n	Prevalence % (95% CI)	Frequency, n	Prevalence % (95% CI)	
Mood disorders									
Any mood disorder	198	4·1% (3·2–5·0)	355	3·8% (3·0–4·6)	410	4·5% (3·6–5·5)	171	3·9% (3·0–4·8)	0·508
Depressive disorders	173	3·6% (2·8–4·5)	304	3·2% (2·5–3·8)	370	4·1% (3·1–5·0)	158	3·8% (2·8–4·7)	0·270
Major depressive disorder	75	1·4% (1·0–1·9)	179	1·9% (1·4–2·3)	276	3·2% (2·5–3·9)	125	3·0% (2·1–3·8)	<0·0001
Dysthymic disorder	40	0·7% (0·4–1·0)	87	0·9% (0·5–1·2)	125	1·5% (0·8–2·1)	60	1·7% (1·0–2·5)	0·0031
Depressive disorder not otherwise specified	88	2·0% (1·4–2·7)	121	1·3% (0·9–1·6)	82	0·8% (0·5–1·1)	29	0·7% (0·2–1·2)	<0·0001
Bipolar disorders	25	0·5% (0·2–0·7)	49	0·6% (0·4–0·9)	37	0·4% (0·2–0·6)	10	0·1% (0·0–0·2)	0·035
Bipolar I disorder	18	0·4% (0·1–0·6)	36	0·5% (0·3–0·7)	30	0·3% (0·1–0·5)	7	0·1% (0·0–0·2)	0·120
Bipolar II disorder	0	<0·1%	6	0·1% (0·0–0·1)	2	<0·1% (0·0–0·1)	2	<0·1% (0·001–0·05)	NA
Bipolar disorder not otherwise specified	7	0·1% (0·0–0·2)	7	0·1% (0·0–0·2)	5	<0·1% (0·0–0·1)	1	<0·1% (0·001–0·01)	0·364
Substance-induced mood disorder	2	<0·1% (0·0–0·1)	0	<0·1	0	<0·1%	0	<0·1%	NA
Mood disorder due to a general medical condition	1	<0·1% (0·001–0·03)	5	0·1% (0·0–0·1)	8	0·1% (0·0–0·3)	3	<0·1% (0·001–0·02)	0·058
Anxiety disorders									
Any anxiety disorder	152	4·3% (3·0–5·6)	370	4·8% (3·7–6·0)	461	6·5% (5·1–7·9)	180	4·7 (3·3–6·1)	0·059
Panic attack	9	0·2% (0·0–0·3)	28	0·2% (0·1–0·3)	44	0·5% (0·2–0·8)	16	0·4% (0·1–0·8)	0·029
Agoraphobia without history of panic disorder	7	0·2% (0·0–0·3)	29	0·3% (0·1–0·5)	30	0·3% (0·1–0·5)	9	0·1% (0·0–0·2)	0·347
Specific phobia	69	1·3% (0·9–1·7)	199	2·2% (1·7–2·7)	257	3·0% (2·3–3·6)	84	1·9% (1·3–2·6)	<0·0001
Social phobia	18	0·3% (0·1–0·5)	43	0·4% (0·2–0·6)	48	0·5% (0·2–0·8)	11	0·4% (0·1–0·7)	0·493
Obsessive-compulsive disorder	75	1·7% (1·2–2·2)	128	1·5% (1·1–2·0)	147	1·9% (1·3–2·4)	59	1·4% (0·8–2·0)	0·641
Posttraumatic stress disorder	4	0·2% (0·0–0·4)	12	0·3% (0·0–0·6)	18	0·2% (0·1–0·4)	1	0·1% (0·0–0·2)	0·766
Generalised anxiety disorder	3	0·1% (0·0–0·2)	14	0·2% (0·1–0·3)	25	0·4% (0·2–0·7)	9	0·2% (0·0–0·3)	0·049
Anxiety disorder due to a general medical condition	0	<0·1%	4	<0·1% (0·0–0·1)	15	0·1% (0·1–0·2)	10	0·2% (0·0–0·3)	NA
Anxiety disorder not otherwise specified	5	0·2% (0·0–0·4)	13	0·3% (0·0–0·7)	38	0·7% (0·4–1·0)	9	0·5% (0·1–0·9)	0·171
Substance use disorders									
Any substance use disorder	81	2·3% (1·6–3·0)	156	2·2% (1·6–2·8)	125	1·8% (1·3–2·3)	25	0·3% (0·1–0·5)	0·00028
Alcohol use disorders	79	2·3% (1·6–3·0)	146	2·1% (1·5–2·7)	107	1·6% (1·1–2·1)	13	0·1% (0·1–0·2)	<0·0001
Alcohol dependence	32	0·8% (0·4–1·3)	58	0·8% (0·5–1·1)	46	0·7% (0·4–1·0)	5	0·1% (0·0–0·1)	0·041
Alcohol abuse	47	1·5% (0·9–2·0)	88	1·3% (0·8–1·8)	61	0·9% (0·6–1·3)	8	0·1% (0·0–0·1)	0·00084
Drug use disorders	3	<0·1% (0·001–0·07)	11	0·1% (0·0–0·2)	18	0·2% (0·0–0·4)	12	0·2% (0·0–0·3)	0·034
Drug dependence	1	<0·1% (0·001–0·04)	9	0·1% (0·0–0·2)	18	0·2% (0·0–0·4)	12	0·2% (0·0–0·3)	0·013
Drug abuse	2	<0·1% (0·001–0·05)	2	<0·1% (0·001–0·01)	0	<0·1%	0	<0·1%	NA
Impulse-control disorders									
Any impulse-control disorder	65	1·6% (1·0–2·3)	99	1·1% (0·8–1·4)	111	1·4% (0·9–1·8)	15	0·2% (0·0–0·3)	<0·0001
Eating disorders									
Any eating disorder	1	<0·1% (0·0–0·1)	2	<0·1% (0·001–0·1)	1	<0·1% (0·001–0·01)	1	<0·1% (0·001–0·03)	0·410
Anorexia	0	<0·1%	0	<0·1%	0	<0·1%	1	<0·1% (0·001–0·03)	NA
Bulimia	1	<0·1% (0·0–0·1)	2	<0·1% (0·001–0·07)	1	<0·1% (0·001–0·01)	0	<0·1%	NA

(Table 4 continues on next page)

	18–34 years		35–49 years		50–64 years		≥65 years		p value (prevalence vs age)
	Frequency, n	Prevalence % (95% CI)	Frequency, n	Prevalence % (95% CI)	Frequency, n	Prevalence % (95% CI)	Frequency, n	Prevalence % (95% CI)	
(Continued from previous page)									
Schizophrenia and other psychotic disorders*									
Schizophrenia or any other psychotic disorders	10	1·4% (0·0–2·8)	10	0·4% (0·0–1·0)	3	0·1% (0·0–0·3)	4	0·1% (0·0–0·3)	0·0077
Schizophrenia	9	1·3% (0·0–2·7)	8	0·4% (0·0–1·0)	3	0·1% (0·0–0·3)	1	<0·1% (0·0–0·1)	0·0089
Other psychotic disorders	1	0·1% (0·0–0·3)	2	0·1% (0·0–0·1)	0	<0·1%	3	0·1% (0·0–0·3)	NA
Delusional disorder	0	<0·1%	0	<0·1%	0	<0·1%	1	<0·1% (0·0–0·1)	NA
Substance-induced psychotic disorder	0	<0·1%	1	<0·1% (0·0–0·1)	0	<0·1%	0	<0·1%	NA
Psychotic disorder due to a general medical condition	1	0·1% (0·0–0·3)	1	<0·1% (0·001–0·02)	0	<0·1%	1	0·1% (0·0–0·2)	NA
Psychotic disorder not otherwise specified	0	<0·1%	0	<0·1%	0	<0·1%	1	<0·1% (0·001–0·02)	NA
Any disorders									
Any disorders (excluding dementia)	410	6·4% (1·9–11·0)	779	10·8% (2·0–19·6)	874	12·0% (5·0–19·0)	335	4·9% (0·8–9·1)	0·461

Prevalence 95% CI could not be calculated when the frequency was equal to 0. NA=not applicable. SCID=structured clinical interview for DSM-IV Axis I disorders. *30-day prevalence is used because SCID can only obtains diagnoses of 30-day prevalence.

Table 4: **Weighted 12-month prevalence of mental disorders by age in China (N=32 552)**

Weighted lifetime prevalence of each sub-categorical mood disorder ranged from less than 0·1% to 3·4% and the weighted 12-month prevalence of subcategorical mood disorders from less than 0·1% to 2·1%. Major depressive disorder was the most prevalent mood disorder (lifetime prevalence 3·4% and 12-month prevalence 2·1%), followed by depressive disorder not otherwise specified (3·2% and 1·4%) and substance-induced mood disorder (both prevalence values <0·1%; table 2)

Weighted lifetime prevalence of the anxiety disorders ranged from less than 0·1% to 2·6% and weighted 12-month prevalence from less than 0·1% to 2·0%. Specific phobia was the most prevalent anxiety disorder (lifetime prevalence 2·6% and 12-month prevalence 2·0%), followed by obsessive-compulsive disorder (2·4% and 1·6%). Other anxiety disorders had a prevalence of less than 1%, and the lowest prevalence was substance-induced anxiety disorder (both <0·1%; table 2).

Weighted lifetime prevalence of individual substance-use disorders ranged from 0·2% to 3·1% and 12-month prevalence from less than 0·1% to 1·1%. Alcohol abuse was the most prevalent substance use disorder (lifetime prevalence 3·1% and 12-month prevalence 1·1%), while drug abuse was the least prevalent (0·2% and <0·1%). Prevalence of any alcohol use disorder (4·4% and 1·8%) was higher than that of any drug use disorders (0·4% and 0·1%; table 2)

Weighted lifetime and 12-month prevalence of any eating disorders was less than 0·1%. The lifetime prevalence of anorexia was higher than that of bulimia; whereas the opposite was true for 12-month prevalence (table 2).

The weighted lifetime prevalence of any schizophrenia and other psychotic disorders was 0·7% and the 30-day prevalence was 0·6%. The main subcategory of this class of disorders was schizophrenia, with a weighted lifetime prevalence of 0·6% and a 30-day prevalence of 0·6% (table 2).

1203 (22·6%) of 5326 respondents aged 65 years or older completed the interview for dementia. 157 (2·9%) of 5326 respondents were diagnosed with dementia. The weighted prevalence of dementia for the population aged 65 years and older was 5·6% (95% CI 3·5–7·6; table 2). 1255 (17·1%) of 7338 respondents aged 55 years to 64 years completed the interview for dementia. 91 (1·2%) of these 7338 respondents were diagnosed with dementia. The weighted prevalence of dementia for this population was 2·7% (95% CI 1·7–3·6; appendix).

12-month prevalence of mental disorders, mood disorders, substance use disorders, and impulse-control disorder showed differences by gender (table 3); substance use disorders, impulse-control disorder, and schizophrenia and other psychotic disorders showed differences in prevalence by age (table 4); and schizophrenia and other psychotic disorders showed differences in prevalence by region (table 5).

Two clusters of disorders show that the lifetime prevalence for any mood, anxiety, substance-use, or impulse-control disorder was 18·3% (95% CI 15·8–20·9)

and the 12-month prevalence was 11·2% (9·5–12·8); the lifetime prevalence for any eating disorder or schizophrenia and other psychotic disorders was 0·8% (0·3–1·3) and the 12-month prevalence was 0·6% (0·1–1·1; appendix).

Discussion

In this first nationwide survey of mental disorders in China, we found that anxiety disorders were the most prevalent. Using multiple stage sampling on 157 Disease Surveillance Points, countrywide representativeness of the CMHS was ensured.[13] Because of social stigma and

the diverse nature of psychotic symptoms, the prevalence of schizophrenia and other psychotic disorders as obtained by face-to-face interview in community surveys might be underestimated. To reduce the frequency of misdiagnosis, two screening questionnaires were designed and administered especially for the sampled interviewees who declined and interrupted the interview, or who had a serious physical condition or intellectual disability at the time of the survey. The computer-assisted personal interviewing process took less time and was more efficient than paper-and-pencil interviewing for fieldwork and quality control.

	Urban		Rural		p value (urban vs rural)
	Frequency	Prevalence % (95% CI)	Frequency	Prevalence % (95% CI)	
Mood Disorders					
Any mood disorder	451	3·9% (3·1–4·6)	685	4·3% (3·4–5·1)	0·437
Depressive disorders	412	3·4% (2·7–4·2)	595	3·7% (3·0–4·5)	0·505
Major depressive disorder	253	1·9% (1·5–2·3)	402	2·3% (1·8–2·8)	0·249
Dysthymic disorder	116	0·9% (0·5–1·3)	196	1·1% (0·8–1·5)	0·335
Depressive disorder not otherwise specified	143	1·4% (0·9–1·9)	179	1·4% (1·0–1·7)	0·965
Bipolar disorders	34	0·4% (0·2–0·6)	87	0·5% (0·3–0·8)	0·226
Bipolar I disorder	27	0·3% (0·1–0·5)	64	0·4% (0·2–0·6)	0·432
Bipolar II disorder	1	<0·1% (0·001–0·03)	9	<0·1% (0·01–0·1)	0·136
Bipolar disorder not otherwise specified	6	0·1% (0·0–0·1)	14	0·1% (0·0–0·2)	0·497
Substance-induced mood disorder	1	<0·1% (0·001–0·03)	1	<0·1% (0·001–0·03)	0·937
Mood disorder due to a general medical condition	9	0·1% (0·0–0·1)	8	<0·1% (0·001–0·05)	0·093
Anxiety disorders					
Any anxiety disorder	462	5·1% (4·0–6·2)	702	4·9% (3·8–5·9)	0·779
Panic attack	36	0·3% (0·1–0·4)	61	0·3% (0·2–0·4)	0·870
Agoraphobia without history of panic disorder	26	0·2% (0·1–0·3)	49	0·3% (0·2–0·4)	0·412
Specific phobia	223	1·7% (1·3–2·1)	386	2·3% (1·8–2·8)	0·040
Social phobia	51	0·4% (0·2–0·6)	69	0·4% (0·2–0·5)	0·772
Obsessive-compulsive disorder	172	1·5% (1·1–1·9)	238	1·8% (1·4–2·2)	0·329
Post-traumatic stress disorder	10	0·2% (0·0–0·4)	25	0·2% (0·1–0·5)	0·640
Generalised anxiety disorder	19	0·2% (0·1–0·4)	32	0·2% (0·1–0·3)	0·555
Anxiety disorder due to a general medical condition	12	0·1% (0·0–0·1)	17	0·1% (0·0–0·1)	0·681
Anxiety disorder not otherwise specified	19	0·3% (0·1–0·5)	46	0·4% (0·2–0·6)	0·561
Substance use disorders					
Any substance use disorder	166	2·1% (1·6–2·5)	221	1·8% (1·3–2·2)	0·343
Alcohol use disorders	147	2·0% (1·5–2·5)	198	1·7% (1·2–2·1)	0·289
Alcohol dependence	60	0·7% (0·5–1·0)	81	0·6% (0·3–1·0)	0·707
Alcohol abuse	87	1·3% (0·9–1·6)	117	1·0% (0·7–1·3)	0·294
Drug use disorders	19	0·1% (0·0–0·2)	25	0·1% (0·1–0·2)	0·405
Drug dependence	19	0·1% (0·0–0·2)	21	0·1% (0·1–0·2)	0·540
Drug abuse	0	<0·1%	4	<0·1% (0·001–0·04)	NA
Impulse-control disorders					
Any impulse-control disorder	123	1·2% (0·8–1·6)	167	1·3% (0·9–1·7)	0·689
Eating disorders					
Any eating disorder	2	<0·1% (0·001–0·10)	3	<0·1% (0·001–0·05)	0·652
Anorexia	0	<0·1%	1	<0·1% (0·001–0·01)	NA
Bulimia	2	<0·1% (0·001–0·10)	2	<0·1% (0·001–0·04)	0·584

(Table 5 continues on next page)

	Urban		Rural		p value (urban vs rural)
	Frequency	Prevalence % (95% CI)	Frequency	Prevalence % (95% CI)	
(Continued from previous page)					
Schizophrenia and other psychotic disorders*					
Schizophrenia or any other psychotic disorders	10	0·1% (0·0–0·3)	17	1·1% (0·2–2·1)	<0·0001
Schizophrenia	6	0·1% (0·0–0·1)	15	1·1% (0·2–2·0)	<0·0001
Other psychotic disorders	4	0·1% (0·0–0·2)	2	<0·1% (0·001–0·11)	0·643
Delusional disorder	1	<0·1% (0·001–0·02)	0	<0·1%	NA
Substance-induced psychotic disorder	0	<0·1 %	1	<0·1% (0·001–0·10)	NA
Psychotic disorder due to a general medical condition	2	0·1% (0·0–0·2)	1	<0·1% (0·001–0·02)	0·036
Psychotic disorder not otherwise specified	1	<0·1% (0·001–0·003)	0	<0·1%	NA
Dementia†					
Dementia	56	4·2% (2·1–6·3)	101	6·6% (3·7–9·6)	0·145
Any disorders					
Any disorders (excluding dementia)	996	5·5% (2·3–8·6)	1405	13·4% (6·1–20·7)	0·020

Prevalence 95% CI could not be calculated when the frequency was equal to 0. NA=not applicable. *30-day prevalence is used because SCID can only obtains diagnoses of 30-day prevalence. †Prevalence of dementia for the population aged 65 years and over.

Table 5: Weighted 12-month prevalence of mental disorders by region in China (N=32 552)

The prevalence of mental disorders obtained in the CMHS were higher than those reported in the two previous large-scale surveys of mental disorders in China. The 1982 survey[14] of mental disorders estimated that the overall point prevalence of all mental disorders in the 12 study areas was 1·1% and that the lifetime prevalence was 1·3%. In 1993, the seven-region epidemiological survey[15] of mental disorders showed that the overall point prevalence of mental disorders was 1·1% and the lifetime prevalence was 1·4%. In 2002, the World Mental Health Survey found the estimated lifetime prevalence of any DSM-IV disorder diagnosed with the CIDI disorder in the urban metropolitan areas of Beijing and Shanghai surveys to be 13·2%.[16,17] A 2009 survey[18] that used SCID in four city-provinces of China reported the adjusted 1-month prevalence of any mental disorder to be 17·5% (95% CI 16·6–18·5). However, these earlier findings are not comparable with our study results because of differences in diagnostic criteria, instruments, survey methods, investigated disorders, and sampled populations. In particular, the surveys on mental disorders in the past 30 years were regional so there was no nationwide representativeness for China.

The findings of our survey suggest that most mental disorders have become more common across China in the past 30 years. There are several possible reasons for this increase. First, the methodology might have been more sensitive in case-finding in the Chinese context than the methods used in previous surveys. In particular, our survey used rigorously trained lay interviewers to administer fully structured psychiatric diagnostic interviews that guaranteed coverage of a wide range of both serious and mild conditions. Second, methodological factors, such as stigma-induced concealment of symptoms, could have diminished among Chinese respondents after societal change, resulting in greater willingness to admit such symptoms to community-based interviewers in this survey than in previous ones. Third, age of onset might be recalled incorrectly, thereby creating the false appearance of cohort effects. Although the probing strategy used in the CIDI helped to reduce this problem, it might not have been corrected completely. Fourth, the assumption of constant conditional risk of first onset in a given year of life among people of different ages, which was used to estimate lifetime risk, is implausible given the increase in prevalence in recent years.

Finally, the Chinese economy has developed at an unprecedented rate over the past 30 years. Rapid social change is likely to bring about a general increase in psychological pressure and stress. As in many countries around the world, Chinese people are also facing many challenges, resulting in mood, cognition, and behavioural disorders and related problems.[1,17] The public and academic community have reached a consensus on the increase in the prevalence of mood, anxiety, alcohol-use, and drug-use disorders and dementia and on the need for targeted interventions.[16]

It should be emphasised that the prevalence of schizophrenia is similar across the world, including China, in the past decades, which indicates that genetic factors have a substantial role in the occurrence of the disorder.[14,15,18]

Although the lifetime prevalence of mental disorders (16·6%) remains low by ICD and DSM standards, if China's population of 1·3 billion is considered, this prevalence value indicates that a very large number of individuals are affected by mental disorders. As mental

disorders bring about substantial disease burden, the Chinese Government should pay more attention to mental health care. Effective interventions must take into account national and local political and economic circumstances, which are unique to different areas across China.

It is important to recognise the limitations of this survey. First, the study participants were general community residents, excluding enclosed institutional communities—such as universities and military settings—and hospitalised patients. Second, this survey is a cross-sectional study, hence recall bias and response bias might influence lifetime prevalence of mental disorders. Finally, as some participants did not respond, selection bias was inevitable.

The data analysis of the CMHS and interpretation of the results will contribute substantially to the understanding and development of mental health in China and abroad. Current knowledge of the mental health status of almost a fifth of the world's population is crucial for understanding global mental health concerns. Data-driven knowledge of mental health needs could inform future policies and practices in China, and offer valuable information to other middle-income and low-income countries.

Contributors
All authors contributed to the collection and interpretation of data and approved the final report. YH was responsible for the CMHS and draft writing, conceived the idea for the Article, supervised and checked the analyses, and wrote the final manuscript. YH, SX, LL, YX, TL, XiuX, YaY, YoY, ZW, and XiaX were coprincipal investigators and designed, implemented, and analysed the data of this study. ZL, LZ, LT, YH, WG, JL, CK, BW, SH, and YM assisted the coprincipal investigators in the design, implementation, and data analysis for the study. YW, LinW, LimW, QL, JY, and GX contributed to the study design, implementation of fieldwork, and quality control of collected data. HT, FJ, JS, SW, NZ, XinD, XiaD, HG, and YW contributed to data collection in the fieldwork. YH, HW, TZ, CM, QL, and HD cleaned and checked the data, wrote the code, did the analysis for the study, and wrote the initial draft. YH, YW, HW, ZL, XY, and JY amended the manuscript and gave suggestions for data analysis.

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