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STUDY PROTOCOLS AND SAMPLES

The China Mental Health Survey (CMHS): I. background, aims and measures

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Abstract The China Mental Health Survey (CMHS) is the first nationally representative community survey on mental disorders and mental health services in China. One-step diagnoses for mood disorders, anxiety disorders and substance use disorders were obtained using the Composite International Diagnostic Interview-3.0 (CIDI-3.0), according to the criteria and definition of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV). A two-step procedure was applied for schizophrenia and other psychotic disorders, using psychosis screening section in CIDI-3.0 as a screening instrument and the Structured Clinical Interview for DSM-IV Axis I disorders (SCID) as a diagnostic tool. Dementia was diagnosed by the 10/66 dementia diagnosis package in a two-step design. The main aims of the CMHS were: (1) to investigate the prevalence of mood disorders, anxiety disorders, substance use disorders, schizophrenia and other psychotic disorders, and dementia; (2) to obtain data of service use of individuals with mental disorders in China; and (3) to analyse the social and psychological risk factors or correlates of mental disorders and mental health services. This paper presents a brief review of the background of the CMHS, its aims and measures.

Keywords China Mental Health Survey · Community survey · Epidemiologic research design · Mental disorder · Psychiatric epidemiology

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Introduction

The prevalence and disease burden of mental disorders have remained incredibly high globally [1]. Previous studies have showed that only 10% of the world's medical research addressed the health needs of 90% of the global population who lived in low- and middle-income countries (LMICs) [2]. The gap between high-income countries and LMICs might be even greater for mental health, which is heavily influenced by socio-cultural factors [3–5]. Although the prevalence of mental disorders in developing countries is lower than that in the USA, evidence showed that 35.5–50.3% of serious cases in developed countries received no treatment, while in developing countries this proportion ranged from 76.3 to 85.4% [6]. Unmet treatment of mental disorders in developing countries might be resolved by implementation of regulations for cost-effective interventions and support for continued research on prevention and treatment options.

In 2007, the global mental health group of the World Health Organization (WHO) called for the global health community, governments, donors, multilateral agencies and other mental health stakeholders to scale up the coverage of services for mental disorders, especially in developing countries [7]. Today, barriers to scaling up mental health services still exist in developing settings [4, 8]. Cross-sectional surveys of mental health may not promote medical resource allocation and public health policy legislation directly, but these surveys are important for service planning and setting up intervention studies by developing hypotheses [9–11]. The USA was early in starting national mental health surveys and has held the National Comorbidity Survey (NCS, 1990–1992) [12] and the National Comorbidity Survey Replication (NCS-R, 2001–2002) [13, 14] in adults during the past three decades. In its latest national survey (NCS-R), the researchers reported that the prevalence of mental disorders changed very little during the decade (29.4% between 1990 and 1992 and 30.5% between 2001 and 2003, $P = 0.52$), but the rate of treatment increased from 12.2% in 1990–1992 to 20.1% in 2001–2003 ($P < 0.001$) [15]. The increase might be explained by legislation and policies that increased accessibility to mental health services by allocating resource and providing financing support to mental health [11, 16, 17], and the development of community programmes to increase the awareness of mental disorders and promote help-seeking behaviours among persons with mental disorders [18].

Cross-sectional surveys of mental health are also valuable to assess the prevalence of mental disorders and examine the patterns, trends and occurrence over time [19–22]. It is a necessary step in the evolution of epidemiological research on mental disorders and provides a firm descriptive foundation for further analytic and experimental epidemiological research. The World Mental Health Survey (WMHS) was the largest and most widely available one [23–25]. This worldwide survey has for the first time utilized the same instrument to evaluate the current situation of mental disorders in each WHO region and has since then set a good example for those countries to do their own national mental health surveys [26].

Epidemiological surveys of mental disorders and mental health services in China

In the late twentieth century, China launched two large-scale cross-sectional epidemiological surveys on mental disorders. Most mental health policies were carried out and put into practice based on the results of these surveys. The first large-scale mental health survey was accomplished in 12 centres of China in 1982 [27]. This survey was based on a multi-stage clustered area probability sample of household-dwelling adults aged 15 years and over. There were 12,000 households with 51,982 adults receiving the interviews altogether. The instruments used in the mental disorder survey in 1982 included Mental Health Screening Schedule, Neurosis Screening Schedule, Mini-Mental State Examination (MMSE), Psychological Stress Evaluation (PSE), and Social Disability Screening Schedule (SDSS) [28]. Schizophrenia, mental retardation, mood disorders, neurotic disorders, substance use disorders, and mental disorders due to vascular diseases were diagnosed according to the criteria and definition of the International Classification of Disease Ninth edition (ICD–9) [29] and the Chinese Classification of Mental Disorders-2 (CCMD-2). The second large-scale mental health survey was carried out in 1993 [30]. Seven areas were chosen from the 12 centres of the 1982 survey. The study methods and procedures were similar to the 1982 survey, and Negative Symptom Assess Scale for schizophrenia, Wechsler Intelligence Scale for Children (WISC) [31], and Adult Intelligence Disability Assessment Instrument [31] were applied in the survey. In total, 7000 households with 23,333 residents completed the survey. Results from the two surveys showed that schizophrenia had the highest lifetime prevalence rate (5.69‰ in 1982 and 6.55‰ in 1993) among all of the mental disorders, and the lifetime prevalence rates of mood disorder were only 0.76 and 0.83‰ specifically. These results were much lower than that from current epidemiological surveys, especially for mood disorder, which ranged from 3.0 to 10.6% [32–35]. Due to the limitations of the instrument and survey methods, it is hard to interpret these earlier findings. However, these two surveys are still valuable, as they provide solid foundations for reforms and

improvements in mental health. Ever since these two surveys, the Ministry of Health and local governments have realized the importance of mental disorders in China and gradually prioritized mental health policy legislation and resource allocation. In 2002, the Ministry of Health, Ministry of Civil Affairs, Ministry of Public Security, and China Disabled Persons Federation signed the joint Chinese Mental Health Working Plan (2002–2010) [36], which put forward a series of principles and priorities for mental health improvement. In 2004, the "686" project, which was in short for the National Continuing Management and Intervention Program for Psychoses [37], was set up by the central government to establish community mental health services, provide free treatment for those with severe mental diseases, and improve mental health knowledge among community residents [38].

Ever since the beginning of the twenty-first century, advances in the diagnostic nomenclature, fully structured diagnostic interviews, and the application of sophisticated household survey technology have led to substantial progress in descriptive epidemiology of mental disorders. Under these circumstances, several regional mental health surveys were launched in China [32, 35, 39–43]. Nevertheless, differences in research methodology make it difficult to understand the current prevalence of mental disorders of the whole nation. Table 1 demonstrates the prevalence of some selected mental disorders as an example to show great variations between results from surveys carried out using the Composite International Diagnostic Interview (CIDI) or the Structured Clinical Interview for DSM-IV (SCID). Since differences may exist among regions, implementations of fieldwork procedures and quality controls might also affect the results, both of which have rarely been reported in significant detail in any of the preceding surveys.

As for mental health service use, the Chinese Health Service Surveys [44–46] conducted in recent years primarily focused on chronic diseases, with very little focus on public usage of mental health services [47, 48]. Although dramatic changes have occurred in mental disorder treatments over the past decades, we are still missing national representative studies primarily focused on usage of mental disorder services in China. First, no standardized investigation method was used, and so the reliability and validity of the results from current surveys [49–51] stayed unclear. Second, many of these studies were done regionally [50–53], which might not be comparable to national data if they were available.

Significance and aims of the CMHS

As a country that has one-fifth of the world's population, it is important that China should launch a national mental health survey on mental disorders and mental health

Table 1 Current prevalence of some selected mental disorders using CIDI or SCID (%)

Survey			References		Major depressive disorder	Generalized anxiety disorder	Obsessive–compulsive disorder	Alcohol abuse	Alcohol dependence	Alcohol use disorder
Site	Year	Location	Author	Year						
CIDI[a]										
Beijing	2010	Household or residents' committee	Liu et al.	2013	3.35	0.29	1.30	1.82	0.29	–
Kunming	2005	Household	Ruan et al.	2010	1.09	0.64	0.13	1.64	0.90	–
Guangzhou	2006	Household	Zhao et al.	2009	0.80	0.34	–	–	–	1.38
WMH-metropolitan China	2001	Household	Shen et al.	2006	2.00	0.80	–	1.60	0.60	1.60
SCID[a]										
Tianjin	2010	Household	Xu et al.	2012	1.14	0.39	0.16	–	–	3.30
Four provinces	2001–2005	Household	Phillips et al.	2009	2.07	1.32	0.08	3.47	2.34	5.81

[a] The current prevalence was measured during the past 12 months for CIDI, and 30 days for SCID

services. Previous study findings all reflected to some extent the growing prevalence of mental disorders in local areas of China. But the generalizability of these results [43, 54–59] was limited due to the fact that psychiatric epidemiology in China has traditionally been hampered by difficulties in conceptualizing and measuring disorders. In our view, it is critical to obtain nationally representative data of mental disorders and service use, both to document the magnitude of the problem and to provide background information for the development of a service system that can adequately address mental health care needs among the whole population.

In an effort to overcome the methodological limitations of earlier surveys, we followed the most advanced and updated epidemiological survey techniques and instruments of mental disorders worldwide [13, 60] under the context of China: a new psychiatric epidemiological survey, the China Mental Health Survey (CMHS) was implemented from 2012 to 2015. The three major aims of the CMHS were: (1) to investigate the prevalence of mood disorders, anxiety disorders, substance use disorders, schizophrenia and other psychotic disorders (abbreviated to "psychosis" in this paper), and dementia; (2) to obtain data about service use of individuals with mental disorders in China; and (3) to analyse the social and psychological risk factors or correlates of mental disorders and mental health services. This article mainly illustrates the background and discusses the measures of this national survey. Since the implementation of fieldwork and quality control methods could have great influences on the outcome of epidemiological survey results, these processes have been greatly focused on. More details of the design, fieldwork procedure and quality controls will be described in a separate paper later. Findings from the CMHS will be reported in our next series of articles.

Considerations of important methodological issues

In the process of design and implementation of the CMHS, several important issues were considered.

First, a nationally representative sampling strategy was necessary. The National Centre for Chronic and Non-communicable Disease Control and Prevention (NCCND) of the Chinese Centre for Disease Control and Prevention (CDC) has set up a national representative chronic disease surveillance system since 2004. The NCCND has carried out three waves of national surveys of prevalence and related risk factors of chronic diseases [61]. The fourth wave was due to be implemented at the same time with the fieldwork of CMHS in 2013. Therefore, cooperation with the NCCND would not only guarantee well-organized administrative support, but also provide a nationally

representative sample for the CMHS. This cooperation was both financially and technically efficient and, more importantly, both physical and mental information gathered from part of the same respondents of the two surveys would be available for further analysis of the interaction between physical and mental health.

Second, the surveillance system covered all 31 provinces, autonomous regions, and municipalities across China (excluding Hong Kong, Macao, and Taiwan), which contain large cultural and geographic differences. Thus, concordance of the instrument was critical in this survey. Although SCID is usually operated by psychiatrists and thus might provide more convincing results, caution has to be made due to the reliability among psychiatrists in large-scale epidemiological surveys as bias estimation would be really difficult if psychiatrists could not receive strict training and supervisions. Compared to SCID, however, it is much easier to perform quality control in the national survey in China, as CIDI is a highly structured instrument. The ability for cross-national comparison was also a major concern. CIDI has been implemented and proved effective in many other countries for epidemiological surveys [14, 22, 62]. Results from the CMHS may be easily compared with these surveys if CIDI is used in the CMHS. Moreover, current evidences are not sufficient to support the conclusion that CIDI would underestimate the prevalence than SCID. Its validity and reliability in China has been well tested [63, 64].

Third, our survey targeted the prevalence and service use related to mood disorders, anxiety disorders, substance use disorders, intermittent explosive disorder, eating disorders, psychosis and dementia, whereas only the former four disorders can be diagnosed by CIDI. However, only the screening section of psychosis was provided in the current CIDI and no section in the CIDI focused on memory function. Thus, SCID was introduced for the diagnosis of psychosis as DSM-IV would be used in the CMHS as the definition and criteria of mental disorders, and the 10/66 Dementia Diagnosis Package was applied for diagnosis of dementia. SCID proved to be reliable and valid in China [65] and has been used in several epidemiological studies for psychosis [39, 43, 54]. In the CMHS, a selected subsample consisted those with positive screening results and a probability sample with negative screening results in the CIDI would be interviewed by SCID. The 10/66 Dementia Diagnosis Package included the Community Screening Instrument for Dementia (CSID) [66, 67] and the Geriatric Mental State AGECAT Package (GMS) [68, 69]. It has been used in the 10/66 Dementia Research Group (10/66 DRG) [70] and has been verified in several developing settings, including China [67, 71, 72].

Fourth, the most important, quality controls of the CMHS and experience of the implementation parties were seriously considered. The Institute of Social Science Survey (iSSS),

Peking University, was selected to be the survey coordination centre, because of earlier fieldwork experiences of CIDI and strict quality control protocols learnt from the Institute for Social Science (ISR), at the University of Michigan, which has been in charge of the fieldwork procedures and quality controls for the NCS-R and has a lot of experience in mental disorders epidemiological surveys with CIDI [13, 14, 73, 74]. Tianjin Mental Health Centre (TJMHC) was the coordination centre for SCID. It has plenty of experience in epidemiological survey of mental disorders with SCID since it organized the Mental Disorders Survey in Tianjin in 2010 [43] using SCID with the supervision of the copyright holder of the Chinese version of SCID [75]. Comprehensive quality control strategies for SCID interview have been established by the TJMHC. Meanwhile, as a member of the international 10/66 DRG since 2000 [76], the Institute of Mental Health, Peking University (IMH), has rich experience in training and utilization of the 10/66 Dementia Diagnosis Package. All these implementation parties can ensure the quality of data collections.

Measures

The CMHS aimed to obtain the diagnoses of the following disorders: mood disorders (bipolar I and II disorders, dysthymia, major depressive disorder, unspecified depressive disorder), anxiety disorders (panic disorder, agoraphobia, specific phobia, social phobia, obsessive–compulsive disorder, generalized anxiety disorder, posttraumatic stress disorder, unspecified anxiety disorder), substance use disorders (alcohol abuse and dependence, drug abuse and dependence, nicotine), intermittent explosive disorder, eating disorders (anorexia and bulimia), psychosis (schizophrenia, schizoaffective disorder, schizophreniform disorder, paranoid psychosis, brief psychotic disorder, substance-induced psychotic disorder, psychotic disorder due to another medical condition, unspecified schizophrenia spectrum and other psychotic disorders) and dementia.

To get these data, the CMHS was divided into two stages. Stage I (administered by the iSSS) was aimed at getting diagnoses for mood disorders, anxiety disorders, substance use disorders, impulsive control disorders and eating disorders, obtaining screening results for psychosis and dementia, and collecting other relevant information such as demographic information, service use and risk factors. Trained interviewers conducted face-to-face interviews using CIDI. The field procedures and quality controls were strictly maintained by the iSSS staff under supervision from the ISR. Quality control protocols consisted of comprehensive strategies using four checking methods, including data check, telephone check, audio record check and field check, to ensure the best quality of the data.

Stage II was administered by the collective efforts from 11 collaborating partner institutions, including four universities and seven top-level psychiatric hospitals, all having significant experience in conducting mental health epidemiological surveys. An additional 31 local psychiatric hospitals were also involved in fieldwork under supervision from the 11 institutions. Trained psychiatrists conducted face-to-face interviews, using the Chinese version of SCID for the diagnosis of psychosis, and the 10/66 Dementia Diagnosis Package for the diagnosis of dementia. Information of service use among patients with psychosis and late life care arrangement among respondents aged 55 years and over was also collected at this stage. Quality control was carried out during Stage II to reduce the system errors to the minimum.

Prevalence

Instruments for generating the prevalence of mental disorders used in the CMHS are summarized in Table 2 and described below in more details.

CIDI

CIDI is a fully structured interview instrument administered by trained lay interviewers. Lifetime and 12-month prevalence of mood disorders, anxiety disorders, substance disorders, impulsive control disorders and eating disorders can be generated through computerized algorithms in accordance with DSM-IV [77, 78]. The interview schedule of the CIDI in the CMHS was similar to the schedules in the NCS-R [13] and other WMH surveys [25], but with some minor alternations to make it suitable for the Chinese settings. Detailed psychometric properties of CIDI can be found from the website of CIDI [79]. Due to word limits, this paper only describe the differences between standard CIDI and the Chinese version of CIDI. In brief, the screening section for core disorders was implemented after collecting information about symptom and function during the past 30 days and lifetime chronic physical diseases and impairments. This change was made because respondents may feel more comfortable talking about psychical problems with an unfamiliar interviewer at the beginning stage of the interview than discussing mental health problems directly [41].

Similar effort as in the NCS-R was made to decrease the average length of the interview by dividing the interview schedule into two parts [13]. But in the CMHS, only posttraumatic stress disorder and attention deficit hyperactivity disorder were assessed in Part II of the interview. The rest of the diagnostic sections and psychosis screening (PS) section were included in Part I of the interview for the entire sample to maximally increase the statistical power.

Table 2 The instruments used in the CMHS

Disorders	Instrument	Investigators	Stage
Mood disorders	CIDI	Trained lay interviewers	Stage I
Anxiety disorders	CIDI	Trained lay interviewers	Stage I
Substance use disorders	CIDI	Trained lay interviewers	Stage I
Impulsive control disorders	CIDI	Trained lay interviewers	Stage I
Eating disorders	CIDI	Trained lay interviewers	Stage I
Psychosis-screening	CIDI	Trained lay interviewers	Stage I
Psychosis-diagnosis	SCID	Psychiatrists	Stage II
Dementia-screening	CSID-participant	Trained lay interviewers	Stage I
Dementia-diagnosis	CSID-informant, GMS	Psychiatrists	Stage II

The selection of Part II of the interview from the entire sample was controlled by the computer-assisted personal interview (CAPI) system, and the interviewed sections were based on the answers in Part I of the interview. Respondents who met lifetime criteria or sub-threshold criteria for any of the Part I disorders and randomly selected 25% of the rest continued their interviews of Part II by simple random sampling. Besides diagnostic sections, Part I of the interview included information on treatments for mental disorders and suicide behaviours; Part II of the interview included assessments of in-depth demographic information, pharmaco-epidemiological information, as well as other risk factors such as childhood adversities, social network and family burdens.

We used Chinese version of CIDI for all of the subjects, as it is popularized nationwide in China. Special efforts were carried out in the CMHS to ensure that CIDI can be understood by a less educated population in China. The Chinese expressions of the wording in CIDI was carefully modified by bilingual researchers from the IMH and the ISR and tested in lower education-level lay people to identify any sentences or words which were difficult to understand. During the field study, we also hired interviewers from local regions with different accents and local dialects to ensure effective communications.

SCID

As mentioned above, CIDI could only be used for the screening of psychosis, and Stage II of the interview was implemented using SCID. Detailed psychometric properties of SCID can be found from the website of SCID. We used the Chinese version of SCID [75] in the CMHS. Those respondents who were confirmed to have positive results from the PS section in CIDI and a randomly selected sample from those with negative results were chosen for Stage II of the diagnostic interviews in the same proportion (1:1). The diagnosis of psychosis was assessed by psychiatrists using selected sections from SCID, including section A for mood episodes, section B for

psychotic and associated symptoms, section C for psychotic disorders, and section D for mood disorders, in accordance with the criteria and definition of DSM-V. If a respondent was diagnosed with any psychosis by a psychiatrist, treatment information of the patient also needed to be collected. Questions to measure the treatment behaviour were adapted from Tianjin Mental Health Survey [43]. Finally, 5.9% of respondents (1661 respondents) entered into Stage II using SCID. The total number who initially screened positive for psychosis on the CIDI was 568 and the percentage was 2.0%.

The 10/66 Dementia Diagnosis Package

As we described earlier, there are several psychometric components included in the 10/66 Dementia Diagnosis Package, and more information could be found from the website of 10/66 Dementia Research Group [80]. The CSID, the GMS, and WHO Disability Assessment Scale II (WHO-DAS II) were the most important components to generate a general diagnosis for dementia and were implemented in the CMHS. The CSID includes two parts, which should be completed by the participants and informants, respectively. The CSID-participant part evaluates the cognitive status of an older person by testing his/her abilities in memory, sense of comprehension and judgement, sense of orientation, calculation, executive functioning, and visual and special identification [67]. The CSID-informant part evaluates the functions in memory, cognitive and functional decline, difficulties in the activity of daily life (ADL), and instrumental activity of daily life (IADL) by asking a person living with the older person. GMS is a multidisciplinary diagnostic process that evaluates older adults' medical, psychological, social, and functional capacity [81]. WHO-DAS II is to evaluate the disability of the old person during the past 30 days. Special information of care arrangements, health service use, and economic cost in older persons was also collected based on relevant questions selected from the 10/66 DRG [60]. Care arrangements include basic information about the primary

caregiver, the occupation of the caregiver, the extent to which the caregiver had cut back on or stopped working to provide care, and the use of a variety of health-care services. Health service use includes hospital services (inpatient and outpatient), community health services, private doctor, dentist, time and duration of visits, out of pocket costs for the consultations and medications, time taken to travel, and cost of travel. Economic cost was assessed using the Client Service Receipt Inventory [82] for assessment of direct and indirect economic costs for mental health services, including the type and cost of accommodation, income of the person with dementia and the principal caregiver, the occupation of the caregiver, the extent to which the caregiver had cut back on or stopped working to provide care, the use (and associated costs) of a variety of health-care services, etc.

Different from the 10/66 DRG, CMHS implemented a two-step diagnosis for dementia to decrease the cost of fieldwork. Step 1 is to screen for dementia by collecting information of CSID-participant part and WHO-DAS II from respondents. These components were integrated with the CIDI CAPI interview and were implemented by lay persons. Screening results were obtained using an algorithm generated from a previous study [83], considering the results of CSID-participant part and WHO-DAS II, and modified based on the education level of the participants. Sample selection for Stage II was similar to that for SCID. Secondary samples included those with positive screening results and the same proportion of older persons randomly selected from those with negative screening results. Both the DSM-IV and 10/66 dementia were generated by running the 10/66 dementia algorithm [84].

To understand the situation of early-onset dementia, the 10/66 Dementia Diagnosis Package was applied among respondents aged 55 years and over. Finally, 25.2% of respondents among persons aged 55 years and over (2732 respondents) entered into Stage II, interviewed by the 10/66 Dementia Diagnosis Package. The total number who initially screened positive for dementia was 1385 and the percentage was 12.8% (10,839 among all respondents aged ≥55).

A flowchart of procedures regarding the measurements in the CMHS is illustrated in Fig. 1.
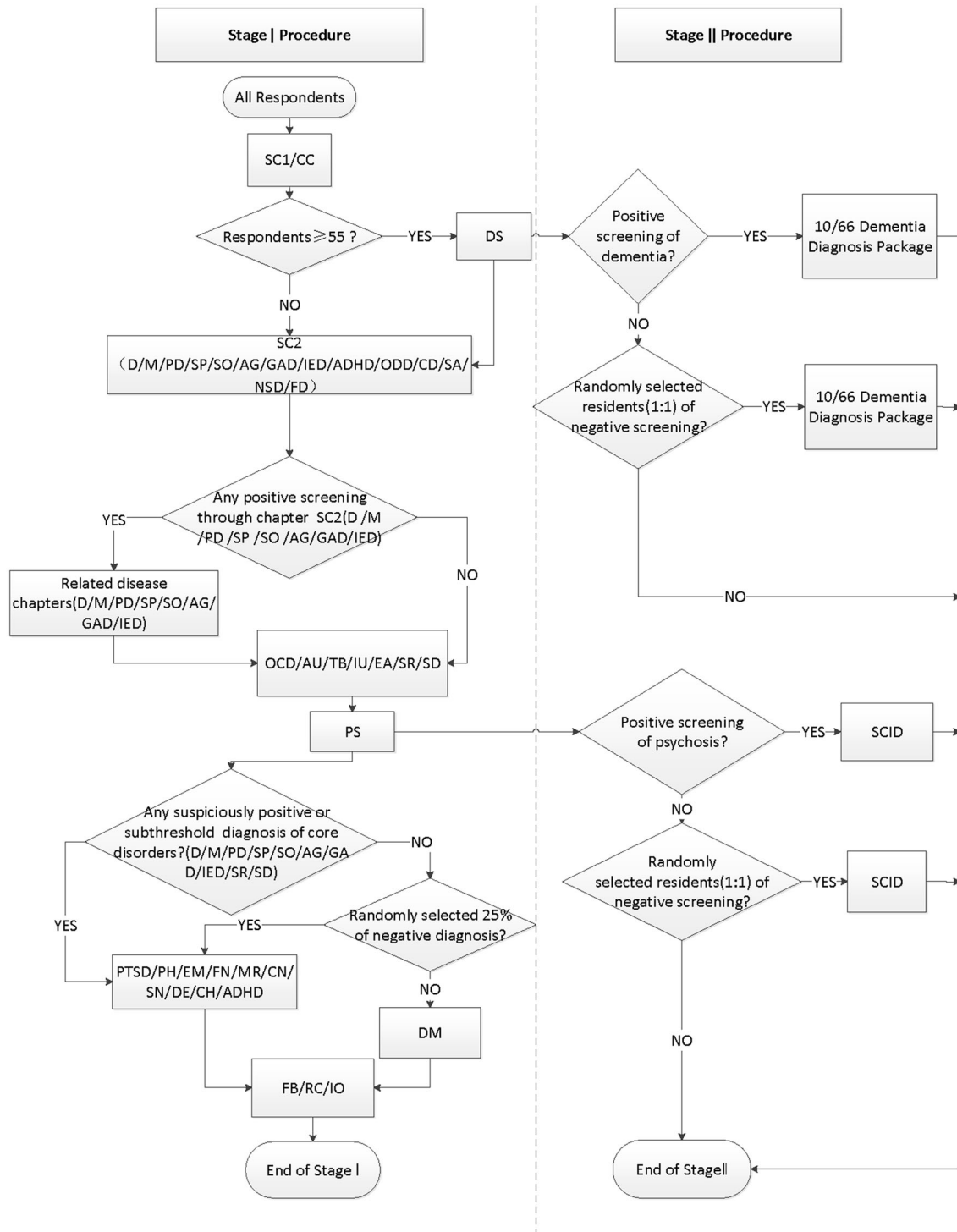
Service use

As described in earlier texts, information about the service use among patients with psychosis or dementia was collected during the interviews of SCID or the 10/66 Dementia Diagnosis Package. For the rest of mental disorders, service use was measured by CIDI in a similar way with that in the NCS-R [8, 85]. In brief, every diagnostic section in CIDI contained information about treatment history and perceived treatment benefit due to a specific disorder, including age and institution of the first and the most recent treatment. An independent service section was included in CIDI to obtain more details about treatment behaviours due to mental health problems, including the frequencies of treatments for the last 3 months, both physically and mentally; the cost of the most recent treatment, direct or indirect cost; reasons for not seeking help, attitudes to different kinds of services. We are aiming at getting service utilization and using prediction models to get the economic cost of mental disorders in China through all this information from service chapters and disease chapters.

However, in the CMHS, a series of new questions was added in the service section of CIDI to measure service use due to any reasons. That means respondents did not need to report whether the treatment was due to physical problem or mental problem. This decision was made due to the following concerns. First, in China, some patients with common mental disorders do not seek help from mental health professionals, because they think they have physical diseases [86]. Second, because of the stigma surrounding mental disorders, a part of patients in China are reluctant to disclose their treatment histories for mental disorders [87]. Some of them would even rather pay the medical costs by themselves than ask for reimbursement from health insurance [52]. Treatment rates for mental disorders would be under estimated if items in CIDI only were used to investigate treatment behaviors. With the design of ignoring the reasons of treatments, which was similar to the method to calculate the attributable cost [88], an attributable service use due to specific mental disorder can be estimated by establishing a regression model among all of the respondents. The partial regression coefficient of each specific mental disorder would represent the additional service use due to the disorder.

Risk factors or correlates

The CMHS can also be used to provide provisional tests of a number of hypotheses about psycho-social risk factors for the onset and course of mental disorders and correlates of mental health service use. These risk factors or correlates can be divided into three levels: the individual level, the genetic level and the environmental level. The individual level included demographic information and health status of the respondent. The genetic level concentrated on family disease history of mental disorders. The environmental level aimed at exploring the influence of childhood adversities, household conditions and social network on the mental health condition of individuals. All these risk factors or correlates can be obtained from CIDI, except for family history of psychosis or dementia, which was

Fig. 1 Flowchart of procedures in CMHS measurements

Table 3 Risk factors or correlates of mental disorders and mental health services

Levels	Risk factors or correlates	Related sections in CIDI
Individual level	Age, gender, education	Screening
	Marital status	Marriage
	Income	Finances
	Employment	Employment
	Physical health status	Chronic disease
	Religiosity	Demographic long
Genetic level	Family history	Diagnostic sections
Environmental level	Childhood adversities	Demographic long
	Household conditions	Family burden
	Social network	Social network

collected from Stage II of the interviews. More details of risk factors or correlates measured by CIDI are described in Table 3.

Overview

The CMHS is the first national representative cross-sectional survey of mental disorders and mental health services in China. The prevalence of mental disorders, use of mental health services, and risk factors or correlates for purposes of targeting interventions can be obtained from the CMHS. This information would provide researchers opportunities to implement provisional tests of a number of hypotheses about psychosocial risk factors for the onset and course of mental disorders as well as patterns and barriers to seeking help. The baseline information would be of great value for mental health reforms and further analytical and experimental studies, and therefore reduce the disease burden of mental disorders in China.

Compliance with ethical standards

Conflict of interest The authors have no competing interests.

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