riers related to negative health beliefs and stigmas toward treatment are the most commonly reported in studies conducted in developed Western countries.[8,9] Reports also indicate that a lack of perceived need for treatment results in less access to physical and mental health care globally.[7,8] Furthermore, treatment dropout rates tend to be high, owing to a lack of satisfaction with the services in addition to financial barriers.[10]

The majority of research that has been conducted relating to barriers to mental health care access originates in Western high-income countries, and it is not known if the results can be generalized to Japan. It has been previously reported that the proportion of those who received treatment among people who had mental disorders in Japan was less than half compared with other high-income countries, despite the fact that the Japanese national health insurance provides universal coverage and patients are free to select a medical institution of their choice.[2] Stigmatizing attitudes towards mental disorders were reported to be more prevalent in the Japanese than in the Australian public.[11] Such stigma could affect their help-seeking behaviors, and also their reasons for not seeking, delaying access to, and dropping out from mental health service.[12,13] For instance, as stigma may be caused by ignorance about mental disorders, low perceived need may be the most frequent reason for these treatment gaps in Japan. Stigmatized attitude toward mental disorders in Japan may also come from a history of mental health care dominated by the long-term hospital care[14] and polypharmacy[15] in this country. People may perceive that mental health treatment is ineffective or even detrimental. If this is the case, attitude barriers may be more frequently reported. It would be useful to address a country-specific pattern of reasons for not seeking treatment, delay in seeking treatment, and dropping out in a context of mental health care in each country, particularly in Japan, which has such a unique background.

To the best of our knowledge, there has only been one study to examine the sociodemographic determinants of attitudinal barriers for the use of mental health services in Japan.[16] The results were inconsistent with those in previous studies conducted in Western countries;[17–19] men tended to have a greater willingness to seek professional help and felt more comfortable talking with a professional than women did. Therefore, the reasons for not seeking treatment, delaying treatment, and dropping out of treatment may be country-specific. Information regarding these reasons in Japan would be useful for improving the availability and accessibility of mental health services.

Using data from the World Mental Health Japan (WMHJ) surveys,[20] this study investigated the patterns of barriers to mental health care access among Japanese community residents and their relations with sociodemographic characteristics in a Japanese community-based sample.

METHODS

Participants

The WMHJ survey was an epidemiological survey of Japanese-speaking community residents aged ≥20 years and part of the global cross-national World Health Organization (WHO) World Mental Health (WMH) survey.[21] In Japan, the data were collected at 11 sites in six prefectures, including three urban cities and nine rural municipalities from 2002 to 2006. These sites were selected on the basis of geographic variation, availability of site investigators, and cooperation of the local government. Subjects for the WMHJ survey were randomly selected from voter registration lists or resident registries at each site. After a letter of invitation was sent, trained lay interviewers contacted the subjects and used a standardized instrument to interview those who agreed to participate in the survey. This survey was composed of two parts: Part 1 of the interview contained a core diagnostic assessment and basic sociodemographic data; and Part 2 collected data about potential correlates and disorders of additional interest. All respondents who consented to participate completed Part 1 of the interview ($n = 4134$, response rate = 55.1%). In the present study, we analyzed data from 4130 participants who had no missing values in the questions relating to reluctance and expectations in the use of mental health services (Fig. 1).

The ethics committees of Okayama University, the National Institute of Mental Health Japan, and Nagasaki University approved the recruitment, consent, and field procedures. Written informed consent was obtained from each respondent. More details of the study procedures have been reported previously.[20]

Measures

Sociodemographic predictor variables

Sociodemographic variables included sex, age, and education. Age was categorized into 20–49 years and

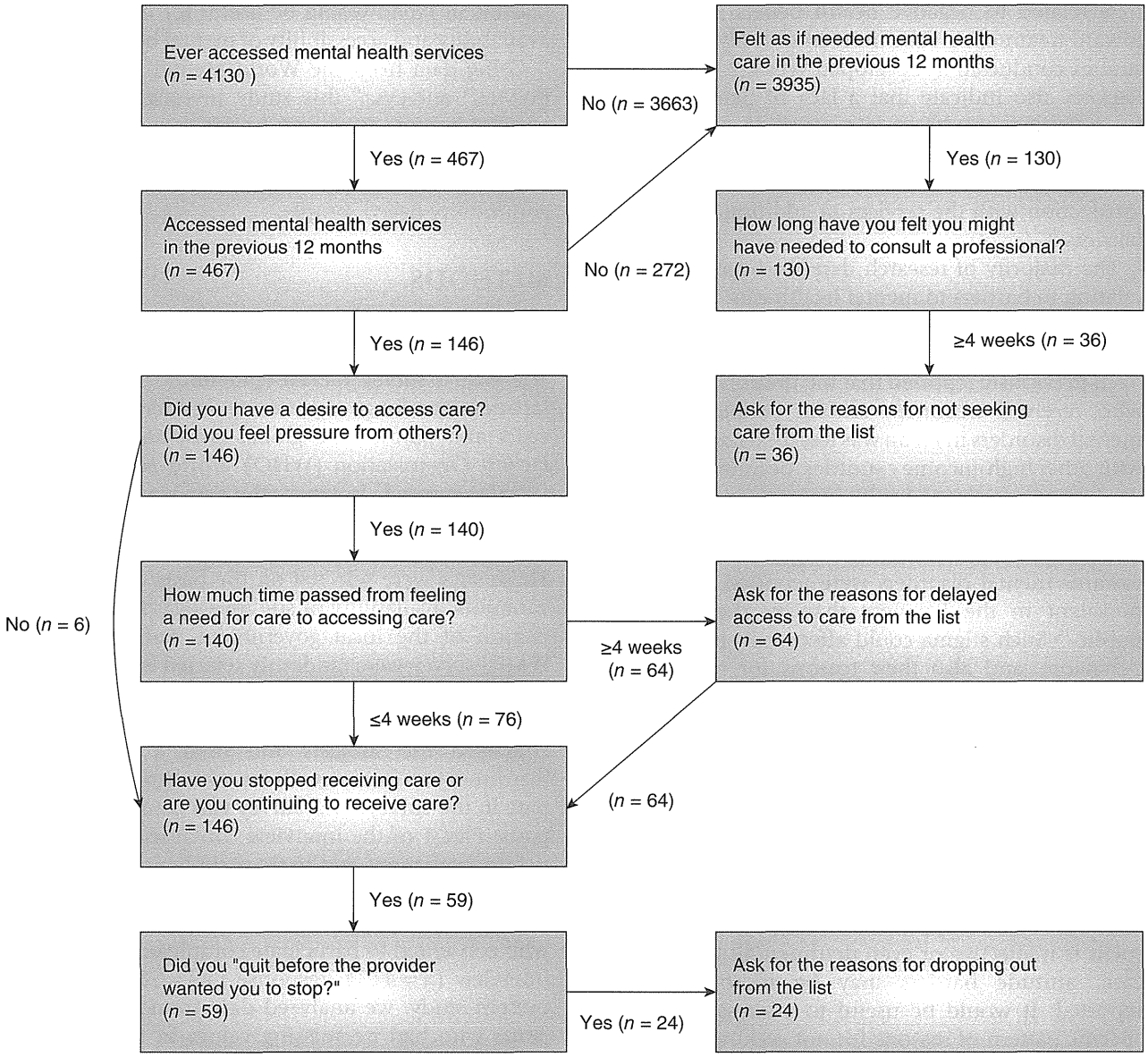

Figure 1. Flow of interview questions regarding reasons for not seeking, delayed access to, and dropping out from mental health services in the World Mental Health Japan Survey.

≥50 years. Education was categorized into 0–12 years and ≥13 years.

Barriers for the use of mental health services

The flow of the questions regarding the reasons for not seeking, delayed access to, and dropping out from mental health services is illustrated in Figure 1. First, the use of mental health care services during the previous 12 months was assessed by asking all respondents if they had consulted any of a list of professionals for problems with emotions, nerves, mental health, or the use of alcohol or drugs. The list of professionals included mental health professionals (e.g. psychiatrist, psychologist), general medical professionals (e.g. general practitioner, occupational therapist), religious counselors, and traditional healers. In this study, 'mental health service use' was

Table 1. Demographic characteristics of total sample with perceived barriers to mental health treatment in the World Mental Health Japan Survey 2002–2006 ($n = 4130$)

	All respondents		Did not seek care		Delayed access to care		Dropped out of care	
	n	%	*n*	%	*n*	%	*n*	%
Age (years)								
18–49	1659	40.2	27	75.0	36	56.3	18	72.0
≥50	2471	59.8	9	25.0	28	43.8	6	24.0
Sex								
Men	1868	45.2	14	38.9	17	26.6	8	32.0
Women	2262	54.8	22	61.1	47	73.4	16	64.0
Education (years)								
0–12	2710	65.6	16	44.4	30	46.9	11	44.0
≥13	1416	34.3	20	55.6	34	53.1	13	52.0
Total	4130	100.0	36	100.0	64	100.0	24	100.0

defined as either the use of the mental health professionals or general medical professionals for problems with emotions, nerves, mental health, or the use of alcohol or drugs.

Reasons for not seeking mental health services

Respondents who reported no use of mental health care services were asked whether they felt they might have needed to see a professional for mental health problems in the previous 12 months. Those who had felt the need but did not access any mental health services were asked the reason for not seeking care (multiple answers allowed; see Table S2).

Reasons for delayed access to mental health services

Respondents who reported accessing mental health care but had delayed access to it for ≥4 weeks after they first felt a need to see a professional for mental health problems were provided a list of potential reasons for the delay from which to choose (multiple answers allowed; see Table S2).

Reasons for dropping out of mental health services

Respondents who had accessed mental health care in the previous 12 months were asked if the treatment had ceased and, if so, if they had 'quit before the provider wanted me to stop.' Those who saw a provider and 'quit' were then provided a list of potential reasons for dropping out similar to the list for not seeking health care (multiple answers allowed; see Table S2).

Data analysis

Proportions of 'reasons for not seeking,' 'reasons for delayed access,' and 'reasons for dropping out' were compared between the groups classified on the basis of sex, age, or education using Fisher's exact tests. Statistical significance was set at a 2-sided $P < 0.01$. All statistical analyses were conducted using STATA version 12 (STATACorp, College Station, TX, USA).

RESULTS

Sample characteristics

The flow of the study respondents through the interview is shown in Figure 1. Of the 4130 respondents, 467 participants (11.3%) reported that they had ever accessed a professional for a mental health problem. In the past 12 months, 146 had consulted a professional for a mental health problem, 130 felt as if they may have needed to access a professional, 36 did not seek help, 64 delayed accessing a professional, and 24 had dropped out of care.

The characteristics of the total sample ($n = 4130$) are provided in Table 1. Approximately 60% of the respondents were ≥50 years old. The number of women was slightly higher (54.8%) than that of men. Approximately one-third of the respondents had an education higher than high school.

Table 2. Reasons for not seeking mental health treatment even though they felt they might have needed professional assistance for a mental health problem ($n = 36$)

		n	%
1	My health insurance would not cover this type of treatment.	2	5.6
2	The problem went away by itself, and I did not really need help.	23	63.9
3	I thought the problem would get better by itself.	3	8.3
4	I was concerned about how much money it would cost.	0	0
5	I was unsure about where to go or who to see.	7	19.4
6	I didn't think treatment would work.	1	2.8
7	I was concerned about what others might think if they found out I was in treatment.	3	8.3
8	I thought it would take too much time or be inconvenient.	6	16.7
9	I wanted to handle the problem on my own.	4	11.1
10	I could not get an appointment.	0	0
11	I was scared about being put into a hospital against my will.	0	0
12	I was not satisfied with the available services.	0	0
13	I received treatment before and it did not work.	0	0
14	The problem didn't bother me very much.	3	8.3
15	I had problems with things like transportation, child care, or scheduling that would have made it hard to get to treatment.	6	16.7

Reasons for lack of access, delayed access, or ceasing mental health care (Tables 2, 3 and 4)

Reasons for not seeking mental health services

The most frequently reported reason for not seeking treatment was 'The problem went away by itself, and I did not really need help' by 63.9%, followed by 'I was unsure about where to go or who to see' by 19.4%, 'I thought it would take too much time or be inconvenient' by 16.7%, and 'I had problems with things like transportation, child care, or scheduling that would have made it hard to get to treatment' by 16.7%.

Table 3. Reasons for delayed access to mental health treatment even though they felt they might have needed professional assistance for mental health problem ($n = 64$)

		n	%
1	My health insurance would not cover this type of treatment.	5	7.8
2	I thought the problem would get better by itself.	31	48.4
3	The problem didn't bother me very much.	30	46.9
4	I wanted to handle the problem on my own.	44	68.8
5	I didn't think treatment would work.	15	23.4
6	I received treatment before and it did not work.	7	10.9
7	I was concerned about how much money it would cost.	9	14.1
8	I was concerned about what others might think if they found out I was in treatment.	18	28.1
9	I had problems with things like transportation, child care, or scheduling that would have made it hard to get to treatment.	14	21.9
10	I was unsure about where to go or who to see.	26	40.6
11	I thought it would take too much time or be inconvenient.	16	25.0
12	I could not get an appointment.	2	3.1
13	I was scared about being put into a hospital against my will.	1	1.6
14	I was not satisfied with the available services.	1	1.6

Table 4. Reasons for dropping out of mental health treatment before the professional wanted them to stop ($n = 24$)

		n	%
1	I got better.	10	41.7
2	I didn't need help anymore.	13	54.2
3	I was not getting better.	7	29.2
4	I wanted to handle the problem on my own.	6	25.0
5	I had bad experiences with the treatment providers.	2	8.3
6	I was concerned about what people would think if they found out I was in treatment.	2	8.3
7	I was treated badly or unfairly.	0	0.0
8	The therapist or counselor left or moved away.	1	4.2
9	I felt out of place.	2	8.3
10	The policies were a hassle.	0	0
11	There were problems with lack of time, schedule change, or lack of transportation.	1	4.2
12	I moved.	0	0
13	Treatment was too expensive.	1	4.2
14	My health insurance would not pay for more treatment.	0	0
15	My family wanted me to stop.	1	4.2

Reasons for delay in accessing mental health services

The most common reasons reported for delayed access to mental health care were 'I wanted to handle the problem on my own' by 68.8%, 'I thought the problem would get better by itself' by 48.4%, and 'The problem didn't bother me very much' by 46.9%.

Reasons for dropping out of mental health services

The most commonly reported reasons for ceasing care were 'I didn't need help anymore' by 54.2%, 'I got better' by 41.7%, 'I was not getting better' by 29.2%, and 'I wanted to handle the problem on my own' by 25.0%.

Demographic correlates of barriers to mental health services (Tables 5, 6 and 7)

Reasons for not seeking mental health services

The proportion of the respondents who reported, 'I was unsure about where to go or who to see' was significantly higher among women than among men ($P < 0.01$).

Reasons for a delay in accessing mental health services

By age, participants aged 20–49 years represented a significantly larger proportion of the respondents who felt structural barriers, including 'I was concerned about how much money it would cost' ($P < 0.01$), and 'I had problems with things like transportation, child care, or scheduling that would have made it hard to get to treatment' ($P < 0.01$).

Reasons for dropping out of mental health services

There were no significant differences in the reasons for dropping out of mental health services by sociodemographic characteristics.

DISCUSSION

The present study demonstrated that low perceived need was the primary and most common reason for not seeking, delayed access to, and dropping out of mental health care services in Japan. Although attitudinal barriers are the ones most commonly reported in Western developed countries,[8,9] in the present study, more frequently reported were low perceived need and structural barriers, such as lack of information about access to services, the presence of other inconveniences, and difficulties in finding time to access care, than attitudinal barriers. But an exception was a desire to handle the problem on one's own, which was also the major reason for delayed access to and dropout from mental health services.

Similar to previous findings,[7] the present study demonstrated that a low perceived need for care was

Table 5. Reasons for not seeking mental health treatment even though they felt they might have needed professional assistance for a mental health problem ($n = 36$)

	Age (years)			Sex			Education (years)		
	20–49 %	≥50 %	*P*	Men %	Women %	*P*	0–12 %	≥13 %	*P*
1 My health insurance would not cover this type of treatment.	3	3	0.48	3	3	1.00	0	6	0.49
2 The problem went away by itself, and I did not really need help.	44	19	0.44	25	39	1.00	31	33	0.73
3 I thought the problem would get better by itself.	8	0	1.00	8	0	0.04	6	3	0.51
4 I was concerned about how much money it would cost.	0	0		0	0		0	0	
5 I was unsure about where to go or who to see.	14	6	0.46	0	19	<0.01*	8	11	1.00
6 I didn't think treatment would work.	3	0	1.00	0	3	1.00	0	3	1.00
7 I was concerned about what others might think if they found out I was in treatment.	6	3	0.25	3	6	1.00	6	3	0.24
8 I thought it would take too much time or be inconvenient.	17	0	0.46	6	11	1.00	3	14	0.27
9 I wanted to handle the problem on my own.	11	0	1.00	6	6	1.00	3	8	1.00
10 I could not get an appointment.	0	0		0	0		0	0	
11 I was scared about being put into a hospital against my will.	0	0		0	0		0	0	
12 I was not satisfied with the available services.	0	0		0	0		0	0	
13 I received treatment before and it did not work.	0	0		0	0		0	0	
14 The problem didn't bother me very much.	6	3	0.42	6	3	0.51	6	3	0.51
15 I had problems with things like transportation, child care, or scheduling that would have made it hard to get to treatment.	17	0	0.46	3	14	0.27	3	14	0.27

*$P < 0.05$, Fisher's exact test.

a particularly important barrier for seeking services. Low perceived need may be associated with a lack of awareness of mental health problems and treatment effectiveness for these problems. This is concordant with the fact that Japanese people are more likely to attribute the cause of schizophrenia and depression to personality traits, such as nervousness or weakness.[22] In addition, low perceived need may be partly related to people's negative perception of mental health service in Japan.

Delayed access to and dropping out of mental health care services were also related to a desire to handle the problem on one's own (68.8% and 25%, respectively). As a reason for the delayed access, it may represent both people's ignorance and negative attitude toward mental health treatment. A similar interpretation could apply to another frequent reason of delayed access, 'I didn't think treatment would work' (23.4%). Jorm also reported a similar tendency in Japan that medication was poorly recognized as an effective treatment for mental illness.[23] We asked about respondents' attitudes to mental health care in general but the latter report specifically addressed pharmaceutical medication. As a reason of dropping out from treatment, a desire to handle the problem on one's own may arise from poor therapist–patient communication, in addition to a negative attitude towards treatment. In addition, the perceived improvement in one's mental health was a common reason for dropping out ('I got better', 41.7%; 'I didn't need help anymore', 54.2%), which again may indicate a poor therapist–patient communication.

Moreover, although these were less frequent reasons, some reasons should be given attention in their clinical implications: 'I received treatment before and it did not work' (10.9%) for delayed

Table 6. Reasons for delayed access to mental health treatment even though they felt they might have needed professional assistance for mental health problem ($n = 64$)

	Age (years)			Sex			Education (years)		
	20–49 %	≥50 %	*P*	Men %	Women %	*P*	0–12 %	≥13 %	*P*
1 My health insurance would not cover this type of treatment.	8	0	0.06	2	6	1.00	3	5	1.00
2 I thought the problem would get better by itself.	25	23	0.62	8	41	0.09	23	25	1.00
3 The problem didn't bother me very much.	22	25	0.21	13	34	1.00	27	20	0.21
4 I wanted to handle the problem on my own.	38	31	0.79	11	58	<0.01*	33	36	1.00
5 I didn't think treatment would work.	16	8	0.39	2	22	0.05	11	13	1.00
6 I received treatment before and it did not work.	8	3	0.45	3	8	1.00	6	5	0.70
7 I was concerned about how much money it would cost.	14	0	<0.01*	2	13	0.42	8	6	0.72
8 I was concerned about what others might think if they found out I was in treatment.	20	8	0.16	8	20	1.00	13	16	1.00
9 I had problems with things like transportation, child care, or scheduling that would have made it hard to get to treatment.	20	2	<0.01*	2	20	0.09	6	16	0.14
10 I was unsure about where to go or who to see.	30	11	0.04	13	28	0.57	14	27	0.13
11 I thought it would take too much time or be inconvenient.	20	5	0.02	5	20	0.53	8	17	0.25
12 I could not get an appointment.	3	0	0.50	0	3	1.00	0	3	0.49
13 I was scared about being put into a hospital against my will.	2	0	1.00	0	2	1.00	0	2	1.00
14 I was not satisfied with the available services.	0	2	0.50	0	2	1.00	2	0	0.49

*$P < 0.01$, Fisher's exact test.

access; 'I was not getting better' (29.2%); and 'I had bad experiences with the treatment providers' (8.3%) for dropping out. These responses may reflect poor quality of community mental health care in Japan, often considered as a tendency of polypharmacy[15] and dominant long-term hospital-based care.[14]

Structural barriers to seeking mental health care services, such as a lack of information about access to services, the presence of other inconveniences, and difficulties in finding time, were also commonly reported as reasons for not seeking mental health care services in the present study. On the other hand, the attitudinal barriers are the most commonly reported in studies conducted in Western studies.[8,9] This discrepancy in the findings between Japan and Western countries[8,9] may be caused by lack of information about access to mental health care.

Being a woman and of younger age were found to be key sociodemographic factors relating to the barriers to the use of mental health services for the following reason: women were more likely to report a lack of information about access to services than men were, and this influenced whether they sought help and how quickly they sought help. In addition, younger participants (<50 years old) reported that structural barriers delayed their access to services, including financial problems, difficulties finding time for care, lack of information about access to services, and the presence of other inconveniences. This finding is also supported by a previous report where individuals aged <50 years were more likely to report structural barriers to seeking services.[7] Therefore, women and younger people may be target groups for disseminating information and education in terms of the use of mental health services. There were no differences in the barriers by years of education. However, dropping out of care owing to a perceived improvement in mental health was more likely among the participants aged <50 years than their older counterparts.

Table 7. Reasons for dropping out of mental health treatment before the professional wanted them to stop ($n = 24$)

	Age (years)			Sex			Education (years)		
	20–49 %	≥50 %	*P*	Men %	Women %	*P*	0–12 %	≥13 %	*P*
1 I got better.	42	0	0.02	8	33	0.24	25	17	0.41
2 I didn't need help anymore.	42	13	0.62	21	33	1.00	29	25	0.40
3 I was not getting better.	21	8	0.21	4	25	0.50	13	17	1.00
4 I wanted to handle the problem on my own.	17	8	0.79	4	21	0.55	4	21	0.24
5 I had bad experiences with the treatment providers.	8	0	1.00	4	4	0.49	0	8	0.49
6 I was concerned about what people would think if they found out I was in treatment.	8	0	1.00	4	4	0.49	4	4	1.00
7 I was treated badly or unfairly.	0	0		0	0		0	0	
8 The therapist or counselor left or moved away.	4	0	1.00	4	0	0.27	4	0	0.36
9 I felt out of place.	8	0	1.00	0	8	1.00	4	4	1.00
10 The policies were a hassle.	0	0		0	0		0	0	
11 There were problems with lack of time, schedule change, or lack of transportation.	4	0	1.00	0	4	1.00	0	4	1.00
12 I moved.	0	0		0	0		0	0	
13 Treatment was too expensive.	4	0	1.00	0	4	1.00	0	4	1.00
14 My health insurance would not pay for more treatment.	0	0		0	0		0	0	
15 My family wanted me to stop.	4	0	1.00	0	4	1.00	4	0	1.00

*$P < 0.01$, Fisher's exact test.

This study has certain limitations. First, a selection bias may affect the findings. The participants who had greater attitudinal barriers, such as stigma towards mental illness, may have been less willing to participate in the study. In addition, previous poor treatment experience may have made people reluctant to participate in the survey. Therefore, the attitudinal barriers may be underestimated in the study. In addition, people with severe mental illness may not wish to participate; more severe illness eventually facilitates problem recognition and prompts help-seeking.[24] Therefore, owing to the presence of less severe symptoms and problems, participants might not have felt that professional help was necessary, and this may explain the lack of a perceived need for mental health care. Second, the sample size was relatively small. The analysis of barriers for the use of health services likely suffered from low power owing to the small number of respondents. And the number of older people who did not seek care was only nine. The findings from this small number of participants may be unstable or biased. Third, the study did not determine the clinical diagnosis of respondents when they felt a need to see a professional or when they dropped out from the treatment. It was not clear that all these respondents really needed mental health care. Fourth, responses to the survey may have been biased by the use of a retrospective self-report. Recall bias may result in either an underestimation or overestimation of symptoms and barriers. Furthermore, self-evaluation for the need for mental health services may not be concordant with the evaluation by professionals. The reasons for low perceived need could be divided into an absence of a problem (e.g. presence of subthreshold symptoms) and low expectations for care (e.g. a perceived ineffectiveness of care or disappointment in the results of care).

The present study found that low perceived need was a major reason for not seeking, delay in using, and dropout from mental health care services in Japan. Low perceived need for care and structural barriers were more frequently reported than attitudinal barriers, with the exception of a desire to handle the problem on one's own. Better recognition of mental health issues, improved understanding of the early signs and symptoms of mental health issues, and increased knowledge of the availability and location of effective care may improve access to care for

people with mental health conditions. In addition, some findings indicate a need to improve therapist–patient communication and quality of care in the community mental health service in Japan.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article at the publisher's web-site:

Table S1. Classification of the barriers to accessing mental health services, reasons for delaying access to mental health services, and reasons for dropping out of mental health services by those related to low perceived need, structural barriers, or attitudinal barriers.

Table S2. Questions used in the interview with the sample of respondents with perceived barriers to mental health treatment in the World Mental Health Japan Survey 2002–2006.

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SPECIAL ARTICLE

Lifetime and 12-month prevalence, severity and unmet need for treatment of common mental disorders in Japan: results from the final dataset of World Mental Health Japan Survey

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Background. The aim of this study is to estimate the lifetime and 12-month prevalence, severity and treatment of Diagnostic and Statistical Manual of Mental Disorders fourth edition (DSM-IV) mental disorders in Japan based on the final data set of the World Mental Health Japan Survey conducted in 2002–2006.

Methods. Face-to-face household interviews of 4130 respondents who were randomly selected from Japanese-speaking residents aged 20 years or older were conducted from 2002 to 2006 in 11 community populations in Japan (overall response rate, 56%). The World Mental Health version of the World Health Organization Composite International Diagnostic Interview (WMH-CIDI), a fully structured, lay administered psychiatric diagnostic interview, was used for diagnostic assessment.

Results. Lifetime/12-month prevalence of any DSM-IV common mental disorders in Japan was estimated to be 20.3/7.6%. Rank-order of four classes of mental disorders was anxiety disorders (8.1/4.9%), substance disorders (7.4/1.0%), mood disorders (6.5/2.3%) and impulse control disorders (2.0/0.7%). The most common individual disorders were alcohol abuse/dependence (7.3/0.9%), major depressive disorder (6.1/2.2%), specific phobia (3.4/2.3%) and generalized anxiety disorder (2.6/1.3%). While the lifetime prevalence of any mental disorder was greater for males and the middle-aged, the persistence (proportion of 12-month cases among lifetime cases) of any mental disorder was greater for females and younger respondents. Among those with any 12-month disorder, 15.3% were classified as severe, 44.1% moderate and 40.6% mild. Although a strong association between severity and service use was found, only 21.9% of respondents with any 12-month disorder sought treatment within the last 12 months; only 37.0% of severe cases received medical care. The mental health specialty sector was the most common resource used in Japan. Although the prevalence of mental disorders were quite low, mental disorders were the second most prevalent cause of severe role impairment among chronic physical and mental disorders.

Conclusions. These results suggest lower prevalence of mental disorders in Japan than that in Western countries, although the general pattern of disorders, risk factors and unmet need for treatment were similar to those in other countries. Greater lifetime prevalence for males and greater persistence for females seems a unique feature of Japan, suggesting a cultural difference in gender-related etiology and course of disorders. The treatment rate in Japan was lower than that in most other high-income countries in WMH surveys.

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Key words: Cross-sectional study, epidemiology, health service research, mental health.

Introduction

The regional variation in the prevalence of common mental disorders has been suggested, with North and South East Asian countries having lower prevalence estimates than countries in other regions (Steel *et al.* 2014). The recent burden of disease reviews for anxiety and mood disorders also identified comparatively low prevalence rates in the North and South East Asia region (Baxter *et al.* 2013; Ferrari *et al.* 2013). Unmet need for treatment has been reported generally both in developing and developed countries (Wang *et al.* 2007), and substantial proportion of patients with severe disorders have not received any care (Wang *et al.* 2007).

In Japan, a community-based survey conducted in early 1990s reported generally lower lifetime

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prevalence for most Diagnostic and Statistical Manual of Mental Disorders (third edition revised; DSMIII-R) mood and anxiety disorders (Kitamura *et al.* 1999) than in developed Western countries. Another community-based survey in an urban population in late 1990s, using the Composite International Diagnostic Interview (CIDI) (Kessler *et al.* 1994), found lower prevalence of anxiety, mood and alcohol use disorders in Japan than in Western countries (Kawakami *et al.* 2004). The former study also reported a very low treatment rate in Japan, with only 10% of those with mental disorders seeking medical treatment (Kitamura *et al.* 1999).

The World Health Organization (WHO) established the World Mental Health (WMH) Survey Consortium in 2000 to study unmet need for treatment of mental disorders across developed and developing countries (Kessler *et al.* 2006). A coordinated series of WMH surveys has subsequently been conducted in 28 countries around the world, including Japan. The WMH Japan Survey was conducted from 2002 to 2006. The preliminarily report of the WMH Japan Survey conducted in 2002–2003 showed lower 12-month prevalence of mental disorders in Japan compared with most Western countries (Kawakami *et al.* 2005). The treatment rate in Japan based on this report was lower than that in the WMH surveys in most developed countries in Europe and the USA but slightly higher than in China, Columbia or Lebanon (Demyttenaere *et al.* 2004; Kawakami *et al.* 2005). However, this initial report was based on a small WMH Japan sample ($n = 1663$) based on a survey carried out only in the Western part of Japan.

The present paper aims to update the results from the earlier WMH Japan report using the final set of data from the full WMH Japan Survey conducted from 2002 to 2006 ($n = 4130$), reporting data on 12-month and lifetime prevalence, comorbidity, severity, treatment and demographic correlates of common mental disorders. This paper also compares impairments in role functioning due to mental disorders and chronic physical disorders and closes with a discussion of the implications of findings for mental health policy in Japan.

Methods

Survey population and subjects

A total of 11 communities in Japan were selected as study sites between 2002 and 2006 for the WMH Japan Survey. A full report of the methods employed within the WMH Japan Survey can be found in elsewhere (Kawakami *et al.* 2005). The sites included three urban cities (Okayama, Nagasaki, Yokohama) and eight rural municipalities (Tamano in Okayama prefecture, Kushikino, Fukiage, Ichiki and Higashi-ichiki in Kagoshima prefecture, Sano in Tochigi prefecture, tendo and Kaminoyama in Yamagata prefecture). These sites were selected in consideration of geographic variation and the availability of site investigators. Participants were randomly selected from Japanese-speaking residents in each site aged 20 years or older, based on a voter registration list or a resident registry. Each site excluding Nagasaki site used following two survey methods; an invitation letter was sent to each subject and then an interviewer visited the homes of the subjects to seek permission to participate in the survey, or community volunteers first contacted the subjects in their homes to recruit them into the survey. At the Nagasaki site, an invitation letter was sent to each subject, and an interviewer conducted the face-to-face interview with those who replied positively. After they received invitation letters, trained interviewers visited them, and face-to-face interviews were conducted for those who agreed to participate in the study. The interview schedule was determined according to the Japanese computer-assisted personal interview version of the WMH version of the WHO CIDI (WMH-CIDI), a fully-structured diagnostic interview. Participants in all sites excluding Yokohama site were provided a coupon equivalent to 2000 JPY (approximately 18 USD), while participants in Yokohama site were provided a coupon equivalent to 2500 JPY (approximately 20 USD). A total of 4130 respondents participated in the study. The final response rate was 55.1%. A pilot study by trained lay interviewers using the Japanese version of WMH-CIDI with a small number of clinical patients showed good concordance between clinical diagnosis and WMH-CIDI diagnosis of major depression and alcohol abuse/dependence (Sakai *et al.* 2003).

The interview was divided into two parts to reduce respondent burden. Part I, administered to all respondents, included the core diagnostic assessment of mental disorders. Part II included correlates of core disorders. Part I was administered to all respondents and Part II to all Part I respondents who met criteria for any mental disorder plus a probability subsample of approximately 10% of other Part I respondents ($n = 1682$). All respondents were weighted to adjust for differential probabilities of selection and post-stratified to match the population distributions on the cross-classification for sex and age, for which the non-response weight in a given group for sex and age was the inverse of the response rate in this category (Kawakami *et al.* 2005). Part II respondents were weighted by the inverse of their probability of selection for part II of the interview (Kawakami *et al.* 2005).

Written consent was obtained from each respondent. The Research ethics Committees of Okayama University (for the Okayama site, reference No 78, approved on 9/18/2001), Yamagata University (for the Yamagata site, reference Nos 17 and 47, approved on 9/6/2004 and 10/18/2005, respectively), Jichii Medical University (for the Tochigi site, reference No eki03-13, approved on 12/10/2003), Juntendo University (for Yokohama City, reference No 17065, approved on 2/20/2006), and Tokyo University (for the Kagoshima and Nagasaki site, reference No 1582, approved on 12/25/2006) approved the protocol of the present survey.

Diagnostic assessment

WMH-J diagnoses were based on the Japanese version of WMH-CIDI, which was developed by an expert group and checked through an expert review and back-translation procedure. Common mental disorders included: anxiety disorders (agoraphobia, generalized anxiety disorder (GAD), panic disorder, post-traumatic stress disorder (PTSD), social phobia, specific phobia); mood disorders (major depressive disorder, bipolar I and II disorders, dysthymia); substance disorders (alcohol abuse with/without dependence, drug abuse with/without dependence); and impulse-control disorders (intermittent explosive disorder (IED)). Any mental disorders in the survey included common mental disorders listed above, and did not include schizophrenia, autism, dementia, intellectual disability and personality disorders. Disorders were assessed using the definitions and criteria of the Statistical Manual of Mental Disorders, fourth edition (DSM-IV). This instrument demonstrated acceptable reliability and validity (Haro *et al.* 2006).

We assessed chronic physical disorders using a standard chronic disorders checklist (Hyattsville, 2004). It included allergies, asthma, cancer, cardiovascular (hypertension, heart attack, other heart disease), diabetes, musculoskeletal disorders (arthritis, chronic back/neck pain), chronic headaches, other chronic pain disorders, ulcer, stroke, tuberculosis, other chronic lung diseases and epilepsy. For symptom-based disorders such as chronic pain, respondents were asked to report whether they had each of them in the past 12 months. For each of the silent disorders such as diabetes, they were asked whether a doctor ever told them they had the condition and, if so, whether they continued to have that disorder in the past 12 months. Checklists of this sort had been shown to yield more complete and accurate reports than open-ended questions (Schoenborn *et al.* 2003).

Severity and role impairment

The WMH-CIDI/DSM-IV disorders within 12 months were classified into three groups (severe, moderate and mild) following previously proposed criteria (Demyttenaere *et al.* 2004) for a comparison purpose. Severe disorders were defined as either of the following four conditions: (a) those meeting the criteria for bipolar I disorder or substance dependence with a physiological dependence syndrome; (b) a suicide attempt in conjunction with any other mental disorder; (c) reporting at least two areas of role functioning with severe role impairment due to a mental disorder in the disorder-specific Sheehan Disability Scales (SDS) that measured four domains of role impairments, including work, home management, social life and close relationships (Leon *et al.* 1997); or (d) reporting overall functional impairment at a level consistent with a Global Assessment of Functioning (Endicott *et al.* 1976) not more than 50 in conjunction with any other WMH-CIDI/DSM-IV disorder (Demyttenaere *et al.* 2004). Respondents who were not classified as severe were then classified as moderate if the interference in role functioning was rated at least moderate in any SDS domain or if the respondent had substance dependence without a physiological dependence syndrome. All other disorders were classified as mild (Demyttenaere *et al.* 2004).

The SDS scale (Sheehan *et al.* 1996) was also administered for one physical disorder selected randomly from among all the physical disorders reported by a respondent, as well as for each mental disorder reported by respondents, to compare impairments in role functioning among mental and physical disorders. To correct bias arising from underrepresented physical disorders due to the probability sampling of these disorders, a weight was applied to each case equal to the number of physical conditions. Then the impairment was categorized into two groups according to the highest SDS domain score across the four domains: severe (7–10) and not severe (0–6).

Treatment within 12 months

Treatment was classified into the following three sectors: mental health specialty (psychiatrist, psychologist, other mental health professional in any setting), general medical care (other general medical doctor or nurse) and non-health care (human services such as religious provider, social worker or counselor in a non-mental health setting and complementary and alternative Internet group, self-help group, or alternative provider). Further, health-care service was defined as mental health specialty or general medical.

Other covariates

Socio-demographic correlates included sex (males, 47.1%, females, 52.9%) and age cohorts [aged 18–34

years (23.2%), 35–49 years (23.0%), 50–64 years (26.9%), and ≥65 years (26.9%)]. For marital status, participants were categorized into two groups: married (72.8%) and not married (27.2%). For educational level, participants were categorized into four groups according to completed years of education [0–11 years (27.9%), 12 years (35.2%), 13–15 years (18.9%), 16 years or more (18.0%)]. For household income, participants were divided into two categories using average income of participants [below average (50%) and above average (50%)]. For employment status, participants were divided into five groups: working, student, homemaker, retired and other.

Statistical analyses

Data were reported on lifetime prevalence, 12-month prevalence, severity, and treatment. Persistence of the disorders was defined as a proportion of 12-month cases among lifetime cases (McLaughlin *et al.* 2010). Multivariable logistic regression was modeled to study socio-demographic predictors. Standard errors (S.E.) of descriptive statistics were estimated using the Taylor series method. Multivariate significance tests were based on Wald χ^2 tests. The logistic regression coefficients were transformed to odds ratios (OR) with design-adjusted 95% confidence intervals (CI). The statistical significance level was set at 0.05 for a two-sided test. All analyses were performed using SAS version 9.4.

Results

Lifetime and 12-month prevalence and comorbidity

Among the samples ($n = 4130$), males and females were included; age ranges were 20–98 years old, with a mean age of 53.6. Twelve-month prevalence of any mental disorder was 7.6%. The rank-order of 12-month prevalence estimates was different to that of lifetime prevalence estimates (Table 1). The classes of disorder with highest lifetime prevalence were anxiety disorders (8.1%) and substance use disorders (7.4%), and that with highest 12-month prevalence were anxiety disorders (4.9%) and mood disorders (2.3%). The proportion of 12-month to lifetime cases was highest for anxiety disorders (60.9%), and lowest for substance use disorders (12.9%). Individual disorders with highest lifetime prevalence were alcohol abuse or dependence (7.3%) and major depressive disorder (6.1%), and those with highest 12-month prevalence were specific phobia (2.3%) and major depressive disorder (2.2%). This inversion might reflect the fact that specific phobia had a persistent course reflected in high proportion of 12-month to lifetime cases (68.0%).

Disorder severity

Among those with any 12-month disorder, 15.3% were classified as severe, 44.1% moderate and 40.6% mild (Table 1). Regarding class of disorder, the most prevalent 12-month severe disorder in the total sample was anxiety disorders (0.9%). Substance use disorders had the highest percentage of severe cases (30.0%), followed by impulse control disorders (21.6%).

Twelve-month treatment

Among all respondents, 5.3% received any treatment. Among respondents who received treatment, 9.9% had severe cases, 13.0% moderate cases, 9.2% mild cases and 67.9% subthreshold cases. Table 2 shows the proportion of each sector of treatment. Among respondents with any mental disorders, 21.9% had received any treatment, 19.5% had received health care and 6.45% had received non-health care. Severe cases were more likely to receive treatments than moderate and mild cases (44.1, 19.7 and 15.9%, respectively). Most common sector of treatment for all cases as well as severe/moderate cases was mental health specialty. Respondents with substance use disorders and IED were less likely to receive any treatment than those with mood disorders and anxiety disorders (83.7 and 82.5% *v.* 61.3 and 75.9%). Among respondents with substance use disorders, general medical treatment was most common, while mental health specialty was most common in the other three classes of disorders.

Socio-demographic predictors of prevalence, severity and treatment

The pattern of socio-demographic correlates of lifetime prevalence was quite different to that of 12-month prevalence (Table 3). Any lifetime mental disorder was more prevalent among males and middle-aged groups (OR, 0.74; 95% CI, 0.54–1.00 and OR, 2.05; 95% CI, 1.19–3.54), and any 12-month mental disorder was more prevalent among females and younger age groups (OR, 1.42; 95% CI, 0.95–2.13 and OR, 3.29; 95% CI, 1.51–7.17). Regarding persistence of disorders, being female and younger age were risk factors of having 12-month mental disorders among lifetime cases (OR, 2.27; 95% CI, 1.28–4.03 and OR, 2.61; 95%CI, 1.05–6.44, respectively) (Table 3). Being presently not married was a risk factor of severe cases (OR, 3.01; 95% CI, 1.40–6.48). Females, younger age groups, respondents who were not working, and those with

Table 1. *Lifetime and 12-month prevalence of specific World Health Organization Composite International Diagnostic Interview/Diagnostic and Statistical Manual of Mental Disorders fourth edition (WMH-CIDI/DSM-IV) common mental disorders and the comorbidity, and prevalence and proportions of 12-month cases by the severity among 4130 respondents of the World Mental Health Japan Survey, 2002–2006*

									Proportion by the disorder severity among 12-month cases					
	Lifetime prevalence		12-month prevalence		12-month cases among lifetime cases		Prevalence of severe 12-month cases in the total respondents		Severe		Moderate		Mild	
Disorder classes/individual disorders	%	(S.E.)	%	(S.E.)	%	(S.E.)	%	(S.E.)	%	(S.E.)	%	(S.E.)	%	(S.E.)
Anxiety disorders														
Panic disorder	0.8	0.1	0.3	0.1	45.0	10.6	0.0	0.0	8.6	6.1	59.6	14.6	31.9	13.8
Agoraphobia without panic disorder	0.2	0.1	0.1	0.0	64.8	15.0	0.0	0.0	27.2	21.0	72.8	21.0	–	NA
GAD	2.6	0.3	1.2	0.2	47.6	5.0	0.4	0.1	29.8	8.4	31.5	6.3	38.6	8.3
Social phobia	1.4	0.2	0.7	0.2	51.9	8.1	0.5	0.2	44.6	15.1	51.9	14.9	3.5	2.6
Specific phobia	3.4	0.3	2.3	0.2	68.0	4.5	0.2	0.1	9.9	4.1	52.0	6.6	38.1	6.0
PTSD*	1.3	0.2	0.7	0.2	55.4	7.1	0.3	0.1	41.9	14.0	10.8	9.1	47.3	14.1
Any anxiety disorders*	8.1	0.6	4.9	0.5	60.9	4.1	0.9	0.3	18.3	5.0	46.4	4.8	35.3	4.5
Mood disorders														
Major depressive disorder	6.1	0.4	2.2	0.3	35.2	3.4	0.5	0.2	20.0	5.9	53.4	7.4	26.6	6.0
Bipolar I and II disorders	0.2	0.1	0.1	0.1	50.3	21.8	0.0	0.0	11.7	12.6	30.9	24.0	57.4	28.5
Dysthymia	1.3	0.2	0.6	0.1	42.7	7.1	0.1	0.1	23.1	10.6	49.7	13.8	27.2	13.0
Any mood disorders	6.5	0.4	2.3	0.3	35.4	3.6	0.5	0.2	19.7	5.6	51.4	6.9	28.9	6.1
Substance use disorders														
Alcohol abuse or dependence*	7.3	0.7	0.9	0.2	12.8	3.0	0.3	0.1	28.5	8.8	8.0	4.5	63.5	10.2
Alcohol dependence only*	0.9	0.2	0.2	0.1	28.7	8.8	0.2	0.1	92.5	7.5	7.5	7.5	–	NA
Drug abuse or dependence*	0.3	0.1	0.0	0.0	14.7	9.6	0.0	0.0	100	0.0	–	NA	–	NA
Drug dependence only*	0.0	0.0	0.0	0.0	39.0	33.6	0.0	0.0	100	0.0	–	NA	–	NA
Any substance use disorders*	7.4	0.7	1.0	0.2	12.9	3.0	0.3	0.1	30.0	8.9	7.8	4.4	62.2	10.2
Impulse control disorders														
IED	1.9	0.2	0.7	0.1	35.6	4.6	0.1	0.1	21.6	11.0	28.5	10.5	49.9	10.6
Any mental disorders†														
1 or more disorders†	20.3	1.2	7.6	0.6	37.3	2.6	1.2	0.3	15.3	3.6	44.1	3.7	40.6	3.4
1 disorder†	14.2	1.1	5.6	0.5	27.3	2.7	0.5	0.2	8.9	4.0	43.5	4.2	47.7	4.2
2 disorders†	3.8	0.3	1.1	0.2	17.6	4.1	0.2	0.1	15.3	6.9	62.8	9.2	21.9	7.4
3 or more disorders†	2.3	0.3	0.9	0.2	41.2	6.7	0.5	0.2	53.4	12.0	26.2	5.9	20.4	11.4

GAD, generalized anxiety disorder; ICD, intermittent explosive disorder; NA: not applicable; PTSD, post-traumatic stress disorder

*Part II sample.

†Part II sample. No adjustment was made for the fact that one or more disorders in the category were not assessed for all part II respondents.

–, no cases.

Table 2. *Association of 12-month World Health Organization Composite International Diagnostic Interview/Diagnostic and Statistical Manual of Mental Disorders fourth edition (WMH-CIDI/DSM-IV) disorder severity with treatment in Part II samples of the World Mental Health Japan Survey, 2002–2006 (n = 1682)**

	Any treatment		Any health care		Mental health specialty		General medical		Non-health care		No treatment	
	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.
Disorder class												
Any mental disorder	21.9	3.3	19.5	3.1	14.8	2.5	10.2	2.2	6.4	2.3	78.1	3.3
Anxiety	24.1	3.5	20.4	3.3	17.8	3.1	10.6	2.9	7.3	2.4	75.9	3.5
Mood	38.7	8.0	34.0	6.9	27.3	5.2	12.6	4.9	15.7	5.8	61.3	8.0
Substance	16.3	7.7	10.4	5.3	4.0	3.1	6.4	4.0	5.9	5.7	83.7	7.7
Impulse control	17.5	10.1	17.5	10.1	17.5	10.1	5.1	5.0	15.5	10.1	82.5	10.1
Severity												
Severe	44.1	11.8	37.0	10.1	26.3	8.8	11.7	6.0	13.7	6.9	53.3	9.7
Moderate	19.7	3.8	17.2	3.5	15.6	3.6	9.7	2.7	8.1	3.0	77.9	4.3
Mild	15.9	4.6	15.6	4.6	9.1	3.3	11.2	4.3	1.9	1.6	84.1	4.1
No disorder	4.0	0.6	3.1	0.4	1.7	0.3	1.8	0.3	1.1	0.3	96.0	0.6

*Significant differences in a proportion for any treatment, mental health specialty, health care, absence of health care and proportion of no treatment among the three categories of a disorder (all $P < 0.05$).

severe disorders were significantly more likely to receive treatment than mild/moderate disorders.

Socio-demographic predictors of each disorder class

Female respondents were more likely than males to experience anxiety disorders and mood disorders (1.9 *v.* 3.0% and 0.56 *v.* 1.7%, respectively), and less likely than males to experience substance use disorders and impulse control disorders within 12 months (0.15 *v.* 0.80% and 0.31 *v.* 0.38%, respectively). Young respondents were more likely than other respondents to experience all types of mental disorders within 12 months (data available on request). Table 4 presents the results of multivariable logistic regression analyses for the association between each disorder class and socio-demographic characteristics. Anxiety disorders were more prevalent among those who were younger and presently not married. Mood disorders were more prevalent among those who were female, young and well-educated. Substance use disorders were more prevalent among males. Impulse control disorders were more prevalent among working respondents.

Impairment in role functioning due to chronic physical and mental disorders

Table 5 shows comparison rates of severe impairment associated with mental and chronic physical disorders in the past 12 months. The three most common chronic physical disorders were allergies (16.8%), back/neck pain (15.9%) and high blood pressure (14.0%), which were more than double prevalent than any mental disorders (7.6%). At the individual level, proportions of respondents with each disorder who reported severe role impairment due to the disorder were highest for trauma, cancer, heart attack and mental disorders. The estimated numbers of people in Japan with severe disorder-specific impairment were presented on the left column of Table 5. At the societal level, taking into consideration both disorder prevalence and individual-level impact, the estimated number of people in Japan with severe disorder-specific impairment was highest for back/neck pain (3494 thousand) followed by mental disorders (2577 thousand).

Discussion

The present study, using the final data set from the WMH Japan Survey conducted between 2002 and 2006, reported 12-month prevalence of common mental disorders, disorder severity and treatment in Japan. In general, the results were consistent with our previous report (Kawakami *et al.* 2005) and other previous surveys in showing that mental disorders were highly prevalent (Weissman *et al.* 1996*a*, *b*, 1997; McBain *et al.* 2012; Baxter *et al.* 2013; Ferrari *et al.* 2013; Steel *et al.* 2014), and often went untreated (Demyttenaere *et al.* 2004; Wang *et al.* 2007; McBain *et al.* 2012). The 12-month prevalence of any mental

Table 3. *Predictors of lifetime and 12-month prevalence, severity and any treatment for World Health Organization Composite International Diagnostic Interview/Diagnostic and Statistical Manual of Mental Disorders fourth edition (WMH-CIDI/DSM-IV) common mental disorders: the World Mental Health Japan Survey, 2002–2006 (part II sample, n = 1682)*

	Any lifetime disorders				Any 12-month disorders among any lifetime disorders				Any 12-month disorders among total respondents				Severity among 12-month cases*				12- month treatment among 12-month cases†			
	OR	95% CI			OR	95% CI			OR	95% CI			OR	95% CI			OR	95% CI		
Sex																				
Male	1.00				1.00				1.00				1.00				1.00			
Female	0.74	0.54	–	1.00	2.27	1.28	–	4.03	1.42	0.95	–	2.13	0.67	0.35	–	1.30	3.46	1.09	–	11.0
Age																				
18–34	1.73	0.95	–	3.15	2.61	1.05	–	6.44	3.29	1.51	–	7.17	2.12	0.49	–	3.02	5.19	1.03	–	26.1
35–49	1.71	0.98	–	2.98	1.79	0.71	–	4.49	2.68	1.23	–	5.86	0.72	0.17	–	3.64	3.74	0.70	–	19.9
50–64	2.05	1.19	–	3.54	1.12	0.43	–	2.92	2.09	0.93	–	4.68	0.89	0.22	–	5.03	2.42	0.67	–	8.71
65+	1.00				1.00				1.00				1.00				1.00			
Education																				
0–11	1.00				1.00				1.00				1.00				1.00			
12	1.15	0.72	–	1.84	1.04	0.55	–	1.95	1.18	0.64	–	2.16	2.07	0.85	–	5.03	2.31	0.63	–	8.50
13–15	1.45	0.87	–	2.40	0.93	0.46	–	1.88	1.36	0.71	–	2.62	3.16	1.24	–	8.04	0.80	0.15	–	4.28
16+	1.96	1.03	–	3.73	1.07	0.56	–	2.06	1.81	0.94	–	3.50	1.62	0.58	–	4.48	1.88	0.41	–	8.72
Marital status																				
Married	1.00				1.00				1.00				1.00				1.00			
Not married	1.17	0.86	–	1.60	1.45	0.89	–	2.35	1.51	1.01	–	2.25	3.01	1.40	–	6.48	0.81	0.38	–	1.70
Income																				
High	0.97	0.76	–	1.25	0.82	0.54	–	1.25	0.89	0.63	–	1.26	1.42	0.68	–	2.99	1.02	0.40	–	2.59
Low	1.00				1.00				1.00				1.00				1.00			
Employment																				
Working	1.00				1.00				1.00				1.00				1.00			
Student	0.51	0.16	–	1.62	1.98	0.31	–	12.85	0.77	0.22	–	2.74	0.73	0.06	–	8.95	1.16	0.27	–	5.09
Homemaker	0.94	0.57	–	1.55	1.24	0.53	–	2.88	1.16	0.71	–	1.91	0.86	0.41	–	1.81	3.03	1.04	–	8.83
Retired	0.88	0.56	–	1.39	0.92	0.37	–	2.26	0.97	0.48	–	1.97	1.15	0.20	–	6.54	6.60	1.80	–	24.3
Other	1.46	0.76	–	2.78	0.79	0.29	–	2.16	1.19	0.53	–	2.67	0.45	0.11	–	1.74	10.0	1.39	–	72.3

*Severe or moderate (coded = 1) *v.* mild (coded = 0) among those who experienced any 12-month disorder.
†Controlling for disorder severity.

Table 4. *Socio-demographic correlates of 12-month prevalence of common mental disorders by disorder class: the World Mental Health Japan Survey, 2002–2006*

	Anxiety*				Mood				Substance*				Impulse control			
	OR	95% CI			OR	95% CI			OR	95% CI			OR	95% CI		
Sex																
Male	1.00				1.00				1.00				1.00			
Female	1.43	0.85	–	2.41	2.86	1.63	–	5.03	0.26	0.08	–	0.86	0.52	0.20	–	1.37
Age																
18–34	3.20	1.10	–	9.34	4.64	1.48	–	14.5	2.35	0.35	–	16.0	1.53	0.23	–	10.2
35–49	2.74	0.98	–	7.63	2.24	0.59	–	8.43	2.13	0.30	–	15.2	1.31	0.19	–	9.20
50–64	2.75	0.98	–	7.70	3.07	0.97	–	9.74	0.72	0.09	–	5.65	0.88	0.14	–	5.50
65+	1.00				1.00				1.00				1.00			
Education																
0–11	1.00				1.00				1.00				1.00			
12	1.04	0.48	–	2.27	2.54	0.95	–	6.74	0.59	0.21	–	1.71	0.53	0.12	–	2.39
13–15	1.55	0.74	–	3.25	2.39	0.86	–	6.65	0.65	0.19	–	2.23	0.81	0.18	–	3.59
16+	1.81	0.78	–	4.19	4.57	1.43	–	14.6	0.46	0.13	–	1.65	0.95	0.19	–	4.79
Marital status																
Married	1.00				1.00				1.00				1.00			
Not married	1.73	1.11	–	2.68	1.81	1.00	–	3.30	0.75	0.30	–	1.91	0.39	0.12	–	1.24
Income																
High	0.84	0.55	–	1.27	0.78	0.50	–	1.23	1.49	0.60	–	3.69	1.13	0.44	–	2.90
Low	1.00				1.00				1.00				1.00			
Employment																
Working	1.00				1.00				1.00				1.00			
Student	1.09	0.29	–	4.11	0.27	0.03	–	2.09	2.25	0.29	–	17.5	<0.001	<0.001	–	<0.001
Homemaker	1.24	0.71	–	2.15	1.56	0.82	–	2.98	0.30	0.03	–	3.51	1.36	0.24	–	7.67
Retired	1.27	0.59	–	2.75	1.89	0.68	–	5.28	0.56	0.05	–	6.58	<0.001	<0.001	–	<0.001
Other	1.73	0.71	–	4.19	1.49	0.55	–	4.04	0.62	0.06	–	6.22	<0.001	<0.001	–	<0.001

*Part II sample.

Table 5. *Proportions of respondents with severe impairment caused by physical and mental disorders in the past 12 months, and estimated number of people in Japan with severe disorder-specific impairment: the World Mental Health Japan Survey, 2002–2006*

	12-month prevalence		Proportion of severe cases among 12-month cases*		Severe cases in the total respondents	National total of people with severely impairing disorder in Japan
	%	S.E.	%	S.E.	%	(thousand)
Physical disorders						
Allergies	16.8	1.3	6.6	2.1	1.1	1161
Back/neck pain	15.9	1.1	21.0	3.4	3.3	3494
High blood pressure	14.0	1.2	1.1	0.3	0.2	166
Arthritis	9.0	0.8	15.6	4.4	1.4	1470
Headaches	5.4	0.6	12.2	2.7	0.7	690
Chronic pain	5.1	0.7	25.3	4.1	1.3	1342
Asthma	4.7	0.6	7.5	3.4	0.4	375
Heart disease	4.7	0.6	14.9	2.3	0.7	729
Diabetes	3.4	0.6	4.1	3.4	0.1	148
Trauma	3.0	0.5	56.5	6.6	1.7	1795
Ulcer	2.4	0.5	16.7	0.5	0.4	428
Heart attack	2.2	0.5	37.1	3.1	0.8	865
Stroke	1.8	0.4	21.2	1.1	0.4	389
Other chronic lung disease	1.3	0.4	0.0	–	0.0	0
Cancer	0.6	0.2	44.5	–	0.2	260
Epilepsy	0.5	0.2	1.4	0.3	0.0	7
Tuberculosis	0.2	0.1	0.0	–	0.0	0
Any mental disorders	7.6	0.6	32.5	4.4	2.5	2577

*Having severe impairment (7–10) of the highest Sheehan Disability Scale domain score across the four domains.

disorders and the four classes of disorders were lower in Japan than in most of other participating WMH countries (Demyttenaere *et al.* 2004). The 12-month prevalence of any mental disorder in WMH participating countries was reported to vary from 4.3% in Shanghai to 26.4% in the USA, with an interquartile range of 9.1–16.9% (Demyttenaere *et al.* 2004). Also, a meta-analysis showed that pooled period prevalence of common mental disorder was 17.6% (95% CI, 16.3–18.9%) with low prevalence in high income countries in Asia (11.5%; 95% CI, 8.1–16.0%) (Steel *et al.* 2014). The present findings are consistent with those of the earlier surveys in showing that a low prevalence of mental disorders was found in Asian countries. However, when considering the severity of health problems, it turned out that mental disorders were the second most prevalent cause of severe role impairment among chronic physical and mental disorders in Japan. We estimated about 2.6 million people in Japan suffering from severe role impairment due to mental disorders, which are an important target of the health care service as a whole in this country.

Similar patterns of 12-month prevalence observed in Japan and other WMH countries include: (1) anxiety disorders were the most common class of lifetime/12-month disorders (WHO International Consortium in Psychiatric Epidemiology, 2000; Demyttenaere *et al.* 2004); (2) the proportions of the samples with a serious disorder were smaller than the proportions with a mild disorder (Demyttenaere *et al.* 2004); (3) major depressive disorder and specific phobia were the most common individual 12-month disorders like other WMH countries (Demyttenaere *et al.* 2004). Alcohol abuse/dependence was less prevalent in 12-month, unlike other WMH countries, where alcohol abuse was one of the most common 12-month disorders. However, if we focused only on lifetime prevalence individual disorders, alcohol abuse/dependence was the most prevalent. This may reflect a shorter persistence of alcohol use/dependence in Japan. But it is also attributable to respondents' underreporting of present alcohol–related problems due to social desirability or avoiding embarrassment. The prevalence of drug abuse/dependence in Japan was especially lower than in the USA and other Western countries (Bijl *et al.* 2003; Kessler *et al.* 2005*b*).

While lifetime prevalence of any mental disorders was higher for men and middle-aged (35–64 years old) groups, persistence of common mental disorders was higher for women and younger groups. The

gender patterns for both prevalence and persistence are different from those reported in the western countries (Seedat *et al.* 2009; Patton *et al.* 2014). The higher overall lifetime prevalence among males and the middle-aged are consistent with higher suicide rates among middle-aged males in Japan (Lamar, 2000). While a previous study did not find that female gender was associated with persistence of depressive symptoms in Japan (Kawakami *et al.* 1995), greater gender discrimination in Japan (United Nations Development Programme, 2013) may be associated with the female dominance in persistence of mental disorders. This should be replicated in other surveys in Japan and other Asian countries to understand if the pattern was Asian culture-related or specific to Japan. It would also be interesting to associate gender segregation experienced by a respondent with disorder persistence. With regard to persistence of each disorder classes, the proportion of 12-month to lifetime cases was highest for anxiety disorders, and lowest for substance use disorders. This inversion might reflect the more persistent course of anxiety disorders and mood disorders than substance use disorders.

Regarding socio-demographic correlates of 12-month disorders, women had a higher risk than men of any mental disorders, anxiety and mood disorders. Men had a higher risk than women of substance use. These results are consistent with a robust gender effect across the clinical subdomains of mental disorder (Baxter *et al.* 2013; Ferrari *et al.* 2013; Steel *et al.* 2014). All of four classes of mental disorders were more prevalent among young and middle-aged respondents than elder (not less than 65 years old) respondents. Those with high education were more likely to have mood disorders. This result is inconsistent with the earlier cross-national study (WHO International Consortium in Psychiatric Epidemiology, 2000), but a previous study reported that high socio-economic status in childhood had positive association with mood disorders in Japan (Honjo *et al.* 2014), and might explain the observed association between education and mood disorders in part. Another explanation is that increased perceptions of stigma among lower educated people led to underreporting of their symptoms. Those being not married had a greater risk of mood and anxiety disorders, that is also consistent with previous studies (WHO International Consortium in Psychiatric Epidemiology, 2000; Weissman *et al.* 1996*b*). Disorder severity had association between marital status, and this result was consistent with the previous study (Shen *et al.* 2006).

Only one out of five people with any mental disorders received any treatment in Japan in the study period. This treatment rate is lower than that in most other high-income countries included in the WMH surveys. The low treatment rate in Japan might partly reflect less health expenditure (8.35% of gross domestic product (GDP)), because the proportion receiving services was reported to correspond to countries' percentages of GDP spent on health care (Wang *et al.* 2007). Also, stigma of mental illness is an important factor which affects treatment rates. The WMH Japan survey is the first to measure the association between severity and treatment in Japan, although previous large-scale surveys found the strong relationship between disorder severity and seeking treatment (Kessler *et al.* 1997; Bijl *et al.* 2003; Demyttenaere *et al.* 2004). We found a strong association between severity and service use. However, the number of mild and subthreshold cases in treatment far exceeded the number of severe cases in treatment. Because the WMH surveys found that mild cases had little impairment of their functioning (Demyttenaere *et al.* 2004), to increase treatment rate for those with severe or moderate disorders should be a primary focus of the future mental health policy in Japan. We should also investigate if the present treatment is effective for these mild and subthreshold cases, and if there could be a better service or support for them. In addition, psychiatric outpatient clinics are largely increasing in Japan since WMH-Japan survey. This may lead to reduce the treatment gap for patients with mental disorders. Other factors that could affect service use were gender, age, educational status and employment status, though some of the associations were not significant. These results are consistent with other studies (Kessler *et al.* 1981; Demyttenaere *et al.* 2004). Women's diminished perceptions of stigma and their greater abilities to recognize their mental health problems can explain the increased service use among them (Kessler *et al.* 1981). Elderly people might avoid seeking mental health care because of the greater perceived stigma of mental disorders and treatments for people in this age range than for those who are younger (Leaf *et al.* 1985). Those well-educated may have more knowledge about mental disorders than those poorly educated (Leaf *et al.* 1985). Those who were not working may have time to seek mental health care, and also working people may hesitate to receive treatment because of stigma at their working place. Higher income showed a negative association with service use that may indicate that financial barrier was rather small in Japan, with universal insurance coverage.

The mental health specialty sector was the most common resource used by people in Japan, although the general medical sector was the largest source of mental health services for most countries (Wang *et al.* 2007). This may reflect attempts by policymakers to strengthen human resources for mental health and decrease financial burden of treatment of mental disorders. Treatment rate for substance use disorders was