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Lifetime and 6-month prevalence of DSM-III-R psychiatric disorders in an urban community in Japan

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Abstract

We conducted a community-based interview survey of a random sample of residents aged 20 years or older in an urban community in Japan using the University of Michigan Version of the WHO Composite International Diagnostic Interview for selected mood and anxiety disorders and alcohol abuse/dependence according to DSM-III-R. The final sample consisted of 1029 respondents (response rate, 57%). The lifetime and 6-month prevalences of selected mood, anxiety and alcohol use disorders were low in general. Alcohol abuse/dependence was more prevalent in men than in women. Younger respondents had a greater risk of generalized anxiety disorder and alcohol dependence. A greater risk of mood, anxiety and alcohol use disorders was observed among a recent birth cohort. We confirmed a lower prevalence of mood and anxiety disorders and alcohol use disorders in a community population in Japan than in Western countries, observations that were similar to previous ones in East-Asian countries. The patterns of demographic correlates and comorbidity are similar to those of most other countries.

Keywords: Mental disorders; CIDI; Gender; Age; Birth cohort; Comorbidity; Cross-cultural

1. Introduction

Cross-national psychiatric epidemiology has revealed a lower prevalence of mood and anxiety disorders among East-Asian countries than in Western countries. For instance, the lifetime prevalence of major depression was 0.9–3.4% in South Korea (Lee et al., 1990), Taiwan (Hwu et al., 1989) and China (Hong Kong) (Chen et al., 1993), while a much higher prevalence (4–16%) has been reported in the US and other Western countries (Andrews et al., 2001; Bland et al., 1988; Canino et al., 1987; Faravelli et al., 1990; Joyce et al., 1990; Kessler et al., 1994, 2003; Weissman et al., 1988b; Wells et al., 1989; Wittch-

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en et al., 1992). A large difference was also observed for alcohol use disorders between these East-Asian countries and Western countries: the lifetime prevalence of alcohol abuse and dependence was lower in Taiwan and Hong Kong (< 3%) (Chen et al., 1993; Hwu et al., 1989) than in the US (14–24%) and Europe (14–24%) (Helzer et al., 1990; Kessler et al., 1994; Wittchen et al., 1992). An exception was South Korea, in which a high lifetime prevalence of alcohol abuse and dependence (11–13%) was observed (Lee et al., 1990), which was attributed to social distress in this country (Helzer et al., 1990).

A comparison of the prevalence of psychiatric disorders between Japan and other East-Asian countries, as well as between Japan and Western countries, would contribute to accumulating knowledge of the diversity in the prevalence of psychiatric disorders worldwide. There have only been a few community-based epidemiological studies of psychiatric disorders in Japan. In a community-based survey in Japan, Kitamura et al. (1999) reported a fairly high lifetime prevalence of DSM-III-R major depression (14%), while the lifetime prevalence of other mood and anxiety disorders was modest (1–2%). However, the validity of this previous study is questionable, since the authors developed their own original diagnostic instrument instead of using an internationally standardized diagnostic instrument. The response rate was also low (43%). On the other hand, an international comparison of major depression among primary care patients (Simon et al., 2002) showed a lower prevalence of major depression in Japan (Nagasaki) and China (Shanghai) than in the Western countries. However, primary care-based findings might be greatly affected by the number of people who seek medical advice. The prevalence of mood, anxiety and alcohol use disorders in Japan should be estimated by a community-based psychiatric epidemiological study using a standardized psychiatric interview and compared with that in other countries.

Previous reports show a consistent gender difference in major depression and alcohol abuse/dependence patterns across countries, including East-Asian countries (Helzer et al., 1990; Weissman et al., 1996). A consistent pattern that a younger birth cohort had a greater risk of mood, anxiety and alcohol use disorders was also observed (Cross-National Collaborative Group, 1992; WHO International Consortium in Psychiatric Epidemiology, 2000). A strong comorbidity among psychiatric disorders has been observed in Western countries (Weissman et al., 1996; WHO International Consortium in Psychiatric Epidemiology, 2000). To examine demographic correlates, birth cohort effects and comorbidity would also be useful in clarifying the pattern of distributions of psychiatric disorders in Japan.

Japan industrialized rapidly and has been in a prolonged economic recession since early 1990s. Social distress has possibly been reflected in the elevated suicide rate since 1998, which is now at the highest rate in the world (Lamar, 2000). We conducted an epidemiological study of selected psychiatric disorders using a standardized structured psychiatric interview, the University of Michigan version of the WHO Composite International Diagnostic Interview version 1.1 (UM-CIDI version 1.1) (Kessler et al., 1994; World Health Organization, 1993), in an urban community in Japan between 1997 and 1999. Based on the data obtained, we here report the lifetime and 6-month prevalence of selected psychiatric disorders, as well as demographic correlates and comorbidity data, according to DSM-III-R.

2. Subjects and methods

2.1. Study site and subjects

Gifu City, the capital of Gifu prefecture, is an urban community located in the middle of the Japanese islands. It has a population of 410 036 according to 1998 data. A total of 2012 subjects were randomly selected from residents aged 20 years or older. A 1997 voter list was used. Between September 1997 and May 1999, 30 trained lay interviewers visited the respondents at their home and conducted a face-to-face interview. Some interviews were conducted at worksites or at the survey center office. Interviews averaged 45 min. The procedures were fully explained to respondents, and written consent was obtained. The study was approved by the Committee of Ethics in Research

Table 1
Distribution of respondents and response rates by gender and age group in a psychiatric epidemiology survey in an urban community in Japan (Gifu City, Japan, 1997–1999)

	No. of respondents	Response rate of initial subjects		Response rate of eligible subjects	
		Response rate (%)	(No. of initial subjects)	Response rate (%)	(No. of eligible subjects[a])
Total	1029	49.9	(2062)	56.9	(1807)
Gender					
Men	451	47.9	(941)	55.6	(811)
Women	578	51.6	(1121)	58.0	(996)
Age group					
20–34	182	33.2	(543)	44.0	(409)
35–49	260	49.0	(514)	53.3	(473)
50–64	313	57.1	(569)	60.9	(534)
65 or older	274	62.6	(436)	69.8	(391)

[a] Excluding those who had died, had moved, or had been institutionalized at the time of the survey.

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Among the subjects, it was found that 176 (8.7%) had moved, 17 (0.8%) had been hospitalized or institutionalized, and 12 (0.6%) had died. These 205 subjects were declared ineligible. Among the 1807 eligible subjects who still lived in Gifu, 596 (33.0%) refused to participate in the study; 148 (8.2%) could not be contacted after trying two or more times; and 33 (1.8%) could not be interviewed due to vision or hearing problems. A total of 1029 (56.9% of the eligible subjects) agreed to participate in the study and were successfully interviewed. A comparison of the gender and age distribution of the response rates indicated that older residents were more likely to participate in the study (Table 1). Our response rate was much lower than the response rates in other countries but still better than it had been in a previous community-based survey in Japan (Kitamura et al., 1999). This should be noted as a limitation in the interpretation of the study findings, in particular, those for younger subjects.

2.2. Diagnostic instruments

The interview questionnaire included the WHO UM-CIDI version 1.1 (Kessler et al., 1994; World Health Organization, 1993) and other relevant questions. The UM-CIDI version 1.1 was developed and used in the US National Comorbidity Survey (Kessler et al., 1994) and has been shown to have good interrater reliability and validity for DSM-III-R mood and anxiety disorders and substance use disorders (Kessler et al., 1998; Wittchen et al., 1995). The Japanese translation of the UM-CIDI was prepared by one of the authors (N.K.). A paper and pencil version was used in the study. The following sections were selected from the UM-CIDI and used for the study: panic disorder, generalized anxiety disorder (GAD), major depression, dysthymia, manic episode, alcohol abuse and alcohol dependence.

Seven DSM-III-R diagnoses were made using a computer algorithm for the NCS: panic disorder, GAD, bipolar disorder, major depression, dysthymia, alcohol abuse and alcohol dependence. All diagnoses were made with exclusion criteria except for psychosis, which was not assessed in this study. Six-month diagnoses of alcohol abuse (harmful use) and dependence were defined as those having at least one symptom within 6 months prior to the interview among those who fulfilled the criteria for lifetime diagnoses.

2.3. Interviewer training

Thirty interviewers received a 3-day training session prepared and administered by the principal investigator (P.I.) (N.K.), who had received official training for the CIDI. The training session included didactic sessions concerning general

interview skills and the interview instrument, mock interviews and role-playing exercises. For quality assurance, each interviewer returned the results of the first three interviews to the survey center, and the interviews were checked by the P.I. or a survey coordinator to ensure that the interviewer correctly understood the procedures.

2.4. Statistical analysis

The lifetime and 6-month prevalences of the seven psychiatric disorders were calculated for the total sample as well as by gender and the four age groups (20–34, 35–49, 50–64 and 65+years old). The difference in the prevalence between genders and among age groups were tested by using a χ^2-test (d.f.=1 and 3, respectively), as well as a χ^2-test for the age trend (d.f.=1).

The seven specific DSM-III-R diagnoses were further categorized into three diagnosis groups to examine the birth cohort effect and comorbidity among the disorders: any mood disorder (major depression, dysthymia or mania), any anxiety disorder (GAD or panic disorder), and any alcohol use disorder (alcohol abuse or alcohol dependence). A birth cohort difference implies a difference in the cumulative incidence rates of a disorder until a certain age among birth cohort groups. The respondents were classified into four birth cohort groups: those born in 1965 or later, between 1950 and 1964, between 1935 and 1950, and in 1934 or earlier. A birth cohort effect was estimated as a relative risk (hazard ratio) of having a disorder before a certain age for each of the birth cohort groups, compared with the oldest birth cohort group (those born in 1934 or earlier), by using Cox's proportional hazard model controlling for gender. For the comorbidity among three diagnosis groups, the association among the groups was assessed by using Fisher's exact probability test. These statistical analyses were conducted using SAS package version 6.12 on a PC (SAS Institute, Cary, NC).

3. Results

3.1. Lifetime and 6-month prevalence

Among selected DSM-III-R disorders, the most frequent lifetime disorder was alcohol dependence, followed by alcohol abuse and major depression (Table 2, top). Dysthymia and GAD were also relatively prevalent. Bipolar disorder and panic disorder were less prevalent (<1%). For the 6-month prevalence, the most frequent DSM-III-R disorder was alcohol dependence, followed by alcohol abuse and major depression (Table 2, bottom). The remaining DSM-III-R disorders were less prevalent (<1%).

3.2. Demographic correlates

The lifetime prevalence of alcohol abuse, alcohol dependence, and any alcohol use disorder was significantly greater for men than for women ($P<0.05$, Table 2, top). The same pattern was observed for the 6-month prevalence ($P<0.05$, Table 2, bottom). The lifetime prevalence of DSM-III-R GAD and alcohol dependence was significantly higher in younger samples ($P<0.05$, Table 2, top). For the 6-month prevalence, DSM-III-R alcohol dependence, as well as any alcohol use disorder, was significantly more prevalent in younger samples ($P<0.05$, Table 2, bottom). There were highly increased relative risks of any mood disorder, any anxiety disorder, and any alcohol use disorder in the youngest birth cohort than in the oldest birth cohort (Table 3).

3.3. Comorbidity

Among 42 respondents who had any mood disorder in their lifetime and 987 who did not, 8 (19%) and 11 (1%), respectively, had a lifetime experience of any anxiety disorders ($P<0.001$); similarly, 5 (12%) and 73 (7%), respectively, had any alcohol use disorder ($P=0.433$). Among 19 respondents who had any anxiety disorder in their lifetime and 1010 who did not, 2 (11%) and 76 (8%), respectively, had a lifetime experience of any alcohol use disorder ($P=0.958$).

4. Discussion

We observed a lower prevalence of DSM-III-R mood and anxiety disorders in this Japanese urban community, using a standardized psychiatric interview, despite the recent increase in the suicide rate

Table 2
Lifetime and 6-month prevalence of DSM-III-R psychiatric disorders in an urban community in Japan (Gifu City, Japan, 1997–1999)

	Total ($n=1029$)	Gender		Difference	Age				Difference
		Men ($n=451$)	Women ($n=578$)		20–34 ($n=182$)	35–49 ($n=260$)	50–64 ($n=313$)	65+ ($n=274$)	
Lifetime diagnosis									
Bipolar disorder (296.4*x*–5*x*)	0.1 (1)	0.2 (1)	–	NS	–	0.4 (1)	–	–	NS
Major depression (296.2*x*–3*x*)	2.9 (30)	3.1 (14)	2.8 (16)	NS	3.3 (6)	2.7 (7)	3.5 (11)	2.2 (6)	NS
Dysthymia (300.40)	1.4 (14)	1.1 (5)	1.6 (9)	NS	2.8 (5)	–	1.6 (5)	1.5 (4)	NS
Any mood disorder	4.1 (42)	4.0 (18)	4.2 (24)	NS	6.0 (11)	3.1 (8)	4.8 (15)	2.9 (8)	NS
Panic disorder (300.01)	0.5 (5)	0.4 (2)	0.5 (3)	NS	0.6 (1)	–	0.6 (2)	0.7 (2)	NS
GAD (300.02)	1.4 (14)	1.8 (8)	1.0 (6)	NS	3.3 (6)	1.9 (5)	–	1.1 (3)	$P=0.017^{*}$
Any anxiety disorder	1.8 (19)	2.2 (10)	1.6 (9)	NS	3.8 (7)	1.9 (5)	0.6 (2)	1.8 (5)	NS
Alcohol abuse (305.00) excl. dependence	3.5 (36)	7.1 (32)	0.7 (4)	$P<0.001$	1.6 (3)	3.5 (9)	5.1 (16)	2.9 (8)	NS
Alcohol dependence (303.90)	4.1 (42)	8.4 (38)	0.7 (4)	$P<0.001$	7.1 (13)	4.6 (12)	3.8 (12)	1.8 (5)	$P=0.043^{*}$
Any alcohol use disorder	7.6 (78)	15.5 (70)	1.4 (8)	$P<0.001$	8.8 (16)	8.1 (21)	8.9 (28)	4.7 (13)	NS
Six-month diagnosis									
Bipolar disorder (296.4*x*–5*x*)	–	–	–	NA	–	–	–	–	NA
Major depression (296.2*x*–3*x*)	1.2 (12)	0.9 (4)	1.4 (8)	NS	0.5 (1)	0.8 (2)	1.9 (6)	1.1 (3)	NS
Dysthymia (300.40)	0.6 (6)	0.7 (3)	0.5 (3)	NS	1.1 (2)	–	1.0 (3)	0.4 (1)	NS
Any mood disorder	1.7 (18)	1.3 (6)	2.1 (12)	NS	1.6 (3)	0.8 (2)	3.2 (10)	1.1 (3)	NS
Panic disorder (300.01)	0.3 (3)	0.2 (1)	0.3 (2)	NS	0.5 (1)	–	0.3 (1)	0.4 (1)	NS
GAD (300.02)	0.8 (8)	0.7 (3)	0.9 (5)	NS	1.1 (2)	1.2 (3)	–	1.1 (3)	NS
Any anxiety disorder	1.1 (11)	0.9 (4)	1.2 (7)	NS	1.6 (3)	1.2 (3)	0.3 (1)	1.5 (4)	NS
Alcohol abuse (305.00) excl. dependence	1.0 (10)	2.2 (10)	– (–)	$P<0.001$	1.6 (3)	0.4 (1)	1.6 (5)	0.4 (1)	NS
Alcohol dependence (303.90)	3.3 (34)	5.9 (31)	0.5 (3)	$P<0.001$	5.5 (10)	4.6 (12)	2.6 (8)	1.5 (4)	NS
Any alcohol use disorder	4.3 (44)	9.1 (41)	0.5 (3)	$P<0.001$	7.1 (13)	5.0 (13)	4.2 (13)	1.8 (5)	$P=0.046^{*}$

NS, $P>0.05$.
* The test for age trend was significant, $P<0.05$.

Table 3
Relative risk of major DSM-III-R psychiatric disorders by birth cohort: hazard ratios estimated by Cox's proportional hazard model on gender and birth cohort (95% confidence intervals)

	Any mood disorders		Any anxiety disorders		Any alcohol use disorders	
Gender (women)	1.2	(0.7–2.3)	0.7	(0.3–1.8)	0.1*	(0.0–0.2)
Birth cohort (born in 1934 or earlier as reference)						
1935–1949	3.5**	(1.3–9.3)	2.0	(0.4–0.7)	2.5*	(1.3–4.9)
1950–1964	8.0*	(2.3–7.7)	4.3	(0.7–28.5)	3.1*	(1.5–6.7)
1965 and above	32.9*	(8.8–22.9	54.4*	(6.8–436.4)	5.2*	(2.3–12.0)

The number of respondents in each birth cohort group was 321 for 1934 or earlier, 324 for 1935–1949, 238 for 1950–1964 and 146 for 1965 or later.
* $P < 0.01$.
** $P < 0.05$.

in Japan (Lamar, 2000). The higher prevalence of major depression in a previous survey in Japan (Kitamura et al., 1999) is possibly attributable to the use of a different diagnostic instrument and a lower response rate. The lifetime prevalence of DSM-III-R major depression in the present study (2.9%) was similar to that found in South Korea (3.4%) (Lee et al., 1990) and slightly greater than that in Taiwan (Hwu et al., 1989) and Hong Kong (0.9–2.4%) (Chen et al., 1993). The prevalence was much lower compared with that in Western countries based on both DSM-III (Weissman et al., 1988b) and DSM-III-R (Biji et al., 1998; Kessler et al., 1994). The lifetime prevalence of DSM-III-R dysthymia (1.4%) and panic disorder (0.5%) was also similar to that in East-Asian countries (0.9–2.2% and 0.1–1.1%, respectively) (Chen et al., 1993; Hwu et al., 1989; Lee et al., 1990) and lower than that in Western countries (2.3–4.7%) (Weissman et al., 1996, 1988a). GAD was much less prevalent in the present study (1.4%) than in other countries (2.9–11.1%). Our study indicated that the prevalence of mood and anxiety disorders in Japan was similar to that in East-Asian countries and lower than that in Western countries.

A previous cross-national study of primary care patients has reported that the 1-month prevalence of DSM-IV major depression was extremely low in Japan (Nagasaki, 1.6%) and China (Shanghai, 2.5%) compared with that in other countries (4–26%) (Simon et al., 2002). Our community-based finding agrees with this previous observation of a low prevalence of major depression in Japan. The findings by Simon et al. (2002) were based on surveys of primary care patients and thus may be affected and biased by medical consultation rates among those who experienced major depression in each country. Our community-based study indicated that the low prevalence in Japan was not attributable to a selection bias in the sense that only those with severe depression sought medical care. Simon et al. (2002) found that symptom patterns and latent structures of major depression were similar in different countries, concluding that DSM criteria are equally relevant across countries. On the other hand, they observed that a given number of depression symptoms were associated with a more severe level of role impairment in the low-prevalence countries (Japan and China combined) than in other countries. The low prevalence of major depression among Asian countries might be attributable to a tendency for only those who have a certain level of role impairment to endorse depression symptoms in these countries. This possible tendency of differential threshold to endorse psychiatric symptoms could also result in a lower prevalence of other mood and anxiety disorders in Japan, as observed in our study. However, unlike the study on primary care patients, which found greater psychological and somatic symptoms in countries with a high prevalence of major depression (Simon et al., 2002), almost no differences were observed between Japan and the US in reporting depression symptoms on negatively worded questions (such as 'depressed') of a self-

report depression scale (Center for Epidemiologic Studies Depression Scale) in a general population (Iwata et al., 1995). If this is true, the lower prevalence of major depression in Japan may not be due to a differential response of depression symptoms in general but could be attributable to a differential response to CIDI-type questions or a different threshold to the reporting of a cluster of symptoms. Our study did not provide evidence for any of these interpretations, since we did not use internationally comparable indicators of role impairment or psychological distress other than CIDI diagnoses. A future international comparison should address these possible hypotheses for the low prevalence of major depression and other mood and anxiety disorders in Japan.

Another possible explanation for the observed lower prevalence of mood and anxiety disorders in Japan is that Japanese people deny their psychiatric symptoms to save face. We conducted a face-to-face interview survey, only the interviewer and interviewee being present. Our interviewers generally felt that respondents were cooperative and sincere. We observed a lower prevalence of mood and anxiety disorders consistently across gender and age groups, while social desirability is expected to be greater among older men in Japan. Such a response bias may exist but does not seem to fully explain the lower prevalence. The lower prevalence was also attributable to a lower response rate (57%) in this study: it is possible that many of the subjects who refused to participate in this study had experienced mood and anxiety disorders; this would have caused the prevalence to be lower. However, this does not seem to fully explain a five- to six-times difference in the prevalence of major depression between this study and recent studies in Western countries using DSM-III-R as the criteria (Biji et al., 1998; Kessler et al., 1994).

The lifetime prevalence of alcohol dependence in this study was greater than the prevalence of DSM-III alcohol dependence in Taiwan (Hwu et al., 1989) and Hong Kong (Chen et al., 1993) but much lower than that in South Korea (Lee et al., 1990) and Western countries (Helzer et al., 1990; Kessler et al., 1994; Wittchen et al., 1992). The lifetime prevalence of alcohol abuse was similar to that in Taiwan (Hwu et al., 1989) and Hong Kong (Chen et al., 1993) but lower than that in South Korea (Lee et al., 1990) and Western countries (Helzer et al., 1990; Kessler et al., 1994; Wittchen et al., 1992). Alcohol abuse/dependence also seems less frequent in East-Asian countries, including Japan, than in Western countries. A genetic intolerance to alcohol, which is predominant among Asians (Ohmori et al., 1986), or a similarly possible tendency to underreport psychiatric symptoms, as we discussed for mood and anxiety disorders, may explain the difference. The high prevalence of alcohol abuse/dependence in South Korea remains puzzling. More detailed research on the prevalence of alcohol abuse/dependence, including people's attitudes toward drinking and the willingness to report alcohol use problems, is necessary to clarify the findings in South Korea.

Gender differences concerning the prevalence of mood and anxiety disorders were not clear in our study. However, the finding is still in line with the fact that gender difference in major depression was less clear among Asian countries (Weissman et al., 1996). On the other hand, a clear gender difference was observed for alcohol abuse and dependence, which is consistent with studies in most countries (Helzer et al., 1990). We observed that the lifetime prevalence of GAD was greater among younger age groups. This is consistent with findings in Hong Kong (Chen et al., 1993) but contrary to those in South Korea (Lee et al., 1990). The age trend for alcohol use disorders was similar to previous findings in Taiwan (Hwu et al., 1989) and Canada (Helzer et al., 1990), although it was different from those in South Korea (Lee et al., 1990) and Puerto Rico (Canino et al., 1987), countries for which the lifetime prevalence increased with age. The age distributions of psychiatric disorders seem to vary across countries. On the other hand, we observed greater risks for any mood disorder, any anxiety disorder, and any alcohol use disorder in a recent birth cohort, which is fairly consistent with previous findings in Asian and Western countries (Canino et al., 1987; WHO International Consortium in Psychiatric Epidemiology, 2000).

Mood disorders and anxiety disorders were closely related in this study, which is consistent with previous literature (Judd et al., 1998; Kessler et al., 2003). On the other hand, the lifetime comorbidity between mood disorders and alcohol use disorders or between anxiety disorders and alcohol use disorders was less impressive. Alcohol use disorders were only weakly associated with major depression in a population-based sample (Helzer et al., 1990). Our findings are also in line with these previous observations.

We observed a lower prevalence of mood, anxiety and alcohol use disorders in a community in Japan than in Western countries, as in other East-Asian countries. The patterns of demographic correlates, birth cohort differences and comorbidity in our sample were quite similar to those of most other countries. However, as we stated before, the lower response rate (57%) may limit the interpretation of the findings, which may lead to both the underestimation and overestimation of the prevalence. In addition, the Japanese version of the UM-CIDI was not fully validated against clinical diagnoses, although it was developed by an expert group and was checked though an expert review and a back-translation procedure. A future study is needed to replicate our finding of a lower prevalence of psychiatric disorders in Japan and to clarify the possible reasons underlying this phenomenon.

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