Prevalence of Mood Disorders According to DSM-III-R Criteria in the Community Elderly Residents in Japan

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Abstract

The prevalence rates of mood disorders according to the DSM-III-R criteria in the community elderly were investigated with structured interviews conducted by psychiatrists. The subjects were 1,965 randomly selected residents aged 65 years or more who lived in Nagai City, Japan. In the first phase, a questionnaire including the short form of the Geriatric Depression Scale (GDS) was distributed to all subjects. In the second phase, all persons scoring 6 points or more on the GDS and approximately half as many of these persons randomly selected from the remaining respondents scoring 5 points or less were examined by psychiatrists using the A and D modules of the Structured Clinical Interview for DSM-III-R. The 1-month prevalence rates of major depression and bipolar disorder were estimated to be 0.9% and 0.0%, and the current prevalence of dysthymia was estimated to be 0.5%. By using additional unstructured clinical interviews, we also found the prevalence rates of adjustment disorder with depressed mood and other types of depression to be 3.8% and 2.5%. For these categories of depression, prevalence rates did not differ significantly by sex or age group, except that the prevalence of adjustment disorder with depressed mood was significantly higher in women than in men.

Key Words: prevalence, DSM-III-R, depression, elderly, Structured clinical interview for DSM-III-R (SCID)

Introduction

Depression is one of the most serious mental health problems in the elderly. As the elderly population increases rapidly in Japan,¹⁾ the number of elderly persons suffering from depression is also expected to increase. To provide the elderly with sufficient mental health services in the community, more epidemiologic investigations of the prevalence of depression in the elderly should be conducted.

Since 1970s the development of psychiatric epidemiology has been encouraged by the introduction of operational diagnostic criteria which were expected to eliminate differences in the criteria of mental disorders among various schools and psychiatrists.²⁾ The publication of operational criteria also promoted the development

of structured diagnostic interview methods that were based on individual criteria and increased the reliability and validity of diagnoses of mental disorders in epidemiologic surveys.

Since the publication of the Diagnostic and Statistical Manual, third edition (DSM-III)³⁾ in 1980, many epidemiologic surveys have been conducted, and some prevalence rates of depression in the elderly according to DSM-III criteria have been reported. Some of these surveys used structured diagnostic interview methods.^{4,5)} The similar prevalence rates reported by the surveys in the United States were attributed to the high reliability of diagnoses. However, as the interviews had been conducted by lay people, the validity with which the basic data on symptoms were measured might be questionable.²⁾ The validity of the diagnoses would have been higher if structured interview methods had been used by psychiatrists.

The revised version of DSM-III (DSM-III-R)⁶⁾ was published in 1987, and several studies of prevalence of depression in the elderly using the new criteria subsequently appeared.⁷⁻¹²⁾ While a few studies used structured interviews conducted by lay people,^{7,8)} other studies used the assessments by psychiatrists' interviews.⁹⁻¹²⁾ However, in the latter studies, psychiatrists did not use any

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structured interview methods that were developed for DSM-III-R. As this problem might have affected the reliability of diagnoses of these studies, a new study in which psychiatrists diagnose depression using structured interview methods specifically is needed.¹³⁾

Therefore, in this study, structured interviews developed for DSM-III-R were conducted by psychiatrists to investigate the overall, age- and sex-specific prevalence rates of depression in the elderly in Japan.

Methods

Subjects were randomly selected from all residents aged 65 years or older as of April 1, 1993, in Nagai City, Yamagata Prefecture. Of its total population of 33,197, the number of persons older than 65 was 6,634; 2,056 (844 men and 1,212 women; mean age, 73.0 ± 6.5) of these persons were randomly selected for this study. Nagai is located in the northeast of Japan. The central part of the city consists of areas of commerce and light industries, such as electrical appliances and textiles, but the surrounding area is mainly farmland. The proportion of the elderly population in Nagai (20%) exceeded the Japanese average (14%).

The survey was conducted over two phases. In the first phase, a questionnaire including a short form of the Geriatric Depression Scale (GDS)^{14),15)} was distributed to all selected persons in August 1993. The local social welfare commission delivered the questionnaire to each subject's home and later collected them. Confidentiality was ensured by the respondents' returning the completed questionnaires in sealed envelopes.

In the second phase, which started 3 months after the first phase, 13 psychiatrists visited all the persons who scored 6 points or more on the GDS and approximately half as many of these persons randomly selected from the remaining respondents who scored 5 points or less on the GDS. The psychiatrists judged whether these subjects were suffering from depression as defined by DSM-III-R by using another questionnaire. This second questionnaire consisted of the A and D modules of the Structured Clinical Interview for DSM-III-R (SCID)¹⁶⁾ and a semistructured section that was specially created for this survey to assess the physical health, social activity, social support, and life events of the subjects. Physical health was assessed by asking about the subjects' physical conditions and medical care utilization and also by a neurologic examination conducted by a psychiatrist, if necessary. The diagnosis of dementia was also made according to DSM-III-R when it was suspected based on Karasawa's Criteria for Judging Senility.¹⁷⁾ Before the psychiatrist's visit, a letter requesting participation in the second phase and a reply form were sent to each subject. When a person did not return the form, he or she was contacted by phone. The psychiatrists visited and examined only those who agreed to be examined.

The GDS is well standardized as a self-administered scale to examine the elderly who are strongly suspected to be suffering from depression.¹⁸⁾ A higher score indicates more symptoms of depression. However, the 6 points which has been proposed as the cut-off point for depression¹⁹⁾ in the GDS is not sufficiently effective in detecting each category of depression defined by DSM-III-R. Therefore, stratified procedures were used in this study to detect false negative cases in each category of depression which might exist in the stratum of 5 points or less.

There are several versions of the SCID with different kinds

of modules. As each module can be used separately, the A and D modules of the SCID-NP (Non-Patient version) were selected for using in this study. After the A and D modules were administered, we made diagnoses of bipolar disorder, major depression, and dysthymia as defined by DSM-III-R. The information provided by the semistructured section of the questionnaire helped us exclude cases with organic background from the cases of mood disorders. When a psychiatrist suspected that a subject might be suffering from another type of depression, the psychiatrist asked unstructured questions to judge whether the subject was suffering from an adjustment disorder with depressed mood according to DSM-III-R or other types of depression. Although other types of depression were considered to include organic mood syndrome and depressive disorder not otherwise specified according to DSM-III-R and so on, the exact diagnoses could not be made even by the psychiatrists because of the lack of information.

The prevalence rate for each category of depression was estimated taking the stratified procedure by GDS-scores and the numbers of non-respondents into account. The numerator of the prevalence rate for a particular category of depression was determined by adding the estimated numbers of persons with the depression in each of the two strata. Each estimated number was calculated by multiplying the observed number of persons with the depression in the final sample group by the inverse of the ratio of the sample size to the original stratum size. The denominator was defined as the number of persons who completed the GDS. As major depression and bipolar disorder had been diagnosed to fulfil the duration criteria of each disorder only when the psychiatric symptoms of the disorders were recognized during the month before the interviews, the prevalence rates for the disorders were estimated as the 1-month prevalence. Since the diagnosis of dysthymia in the SCID is restricted to cases with symptoms for more than half of the previous 2-year period, we denote the estimated prevalence of dysthymia in this study the current prevalence rate. The associations between the prevalence and sex or age of the subjects were examined by using Mantel Haenszel chi-square test to adjust the effect of the stratified procedure.

Before the survey, one author (Y.M.) gathered all of the participating psychiatrists in a half-day seminar, and instructed them how to use these modules and the other parts of the structured questionnaire with reference to his own experience with pre-tests. After the seminar, the psychiatrists conducted pre-tests on their own patients. The results of the pre-tests were evaluated by both the psychiatrist and the author. The latter also reviewed the results of all questionnaires to confirm the diagnoses after the survey.

Results

Phase 1

Before the survey, 29 persons had died, 22 had been hospitalized, 5 had been institutionalized, and 11 had moved outside the city. Of the remaining 1,989 persons, 20 refused to answer the questionnaire and 4 could not be contacted. Of the 1,965 persons (98.8%, 809 men and 1,156 women, mean age 72.8 ± 6.4) who returned the questionnaires, 1,343 successfully completed the GDS and were considered to have given valid responses. Using the chi-square test, statistically significant differences in the sex and age distributions were not observed

between respondents with valid GDS and respondents with invalid GDS (Table 1). Of the 1,343 respondents, 319 (106 men and 213 women) scored 6 points or more on the GDS. These 319 subjects and another 150 subjects (61 men and 89 women) randomly selected from the 1,024 respondents who scored 5 points or less on the GDS became the subsample for phase 2.

Phase 2

Excluding persons who refused to be interviewed or could not be interviewed for some other reasons, 206 subjects who scored 6 points or more on the GDS and 117 subjects who scored 5 points or less were interviewed by the psychiatrists (Table 2). The response rate of subjects with 6 points or more was lower than that of subjects with 5 points or less (chi-square test, $p = 0.003$), because of the higher percentage of persons who refused to be interviewed in the former group (chi-square test, $p = 0.006$). The sex and age distributions of unexamined persons who scored 5 points or less did not differ from those of examined persons (chi-square test; sex, $p = 0.08$; age, $p = 0.21$). The age distribution of the unexamined persons who scored 6 points or more also did not differ from that of the examined persons (chi-square test; $p = 0.51$). However, among the persons scoring 6 points or more, the percentage of females in the unexamined group (74.3%) was higher than that in the examined one (63.6%; chi-square test; $p = 0.05$).

The numbers of cases which were diagnosed as depression by psychiatrists are shown in the two groups selected according to GDS-scores in Table 3. No cases of bipolar disorder were found in either group. All persons with depression were not demented, while there were 22 demented persons in the 6 points or more group and 4 in the 5 points or less group. The prevalence rates were estimated taking the stratified procedure into account, and they are also shown in Table 3.

Table 1 Distribution of respondents with valid GDS* and with invalid GDS by age and sex in the Phase 1 survey

	Number of Respondents	Respondents with valid GDS (%)	Respondents with invalid GDS (%)	p value [†]
Total	1965	1343	622	
Sex				
men	809	542 (67.0)	267 (33.0)	0.281
women	1156	801 (69.3)	355 (30.7)	
Age				
≤74	1280	891 (69.6)	389 (30.4)	0.100
≥75	685	452 (66.0)	233 (34.0)	

*Geriatric Depression Scale. [†] χ^2 test.

Table 2 Subjects examined by psychiatrists in the Phase 2 survey

	Respondents with GDS* ≥ 6 (%)	Respondents with GDS ≤ 5 (%)	P value [†]
Selected sample	319	150	
Examined	206 (64.6)	117 (78.0)	0.003
Not examined	113 (35.4)	33 (22.0)	
Refused	100 (31.3)	30 (20.0)	0.006 [‡]
Moved	2 (0.6)	3 (2.0)	
Hospitalized	7 (2.2)	0 (-)	
Dead	4 (1.3)	0 (-)	

*Geriatric Depression Scale. [†] χ^2 test.

[‡] χ^2 test of 2×5 (refused, moved, hospitalized, dead, and examined) table.

Table 4 presents the age and sex distribution of persons with depression in the two groups and the estimated prevalence of each disease. In women, the prevalence of major depression tended to be higher than in men, and that of adjustment disorder with depressed mood was significantly higher (Mantel Haenszel chi-square test; $p = 0.031$). Although the prevalence of major depression tended to be higher in persons aged 75 years or more than in persons aged 74 years or less, no statistically significant difference was recognized in major depression and in other categories of depression between the two age groups.

Discussion

Our investigation using the SCID with psychiatrists' assessment found that the 1-month prevalence rate for major depression among persons aged 65 years or more in Japan was 0.9%. Among previous studies of the prevalence rates of major depression in the elderly according to DSM-III-R, three reported similar prevalence rates of less than 1%.^{7,11,12} On the other hand, three additional studies reported much higher prevalence rates.^{8,10}

These higher prevalence rates may have been caused by methodologic problems or differences. Girling et al.¹⁰ reported a 2-month prevalence rate of 2.4% and Skoog et al.⁹ reported a 1-month prevalence rate of 7.7%. Although the age distribution in both studies was higher than in our study (> 77 and $= 85$ respectively), their results might have been as valid as ours because each case in their studies was diagnosed on the basis of a psychiatrist's assessment. However, their definition of major depression actually differed from that of DSM-III-R, and the structured interview methods used in both studies had originally been developed for other criteria.^{20,21} In their studies, the duration criteria of major depression is not well taken into consideration. Kawakami et al. reported a prevalence rate of 3.1%.⁸ Although the 6-month period of investigation was longer than ours, the difference in the lengths of the investigating periods does not seem to have caused the difference between their prevalence rate and ours. Previous studies using DSM-III criteria have shown the incidence of major depression to be approximately 1%.²² Therefore, the prevalence rate in our study would not have been as high as that of Kawakami et al. even if the length of our investigation period had been as long as theirs. Instead, we believe the results are affected by the difference in diagnostic definitions, as their prevalence rate was not for major depression but for major depressive episodes. They used only a particular part of the structured interview methods performed by

Table 3 Number of cases and estimated 1-month prevalence rates of mood disorders according to DSM-III-R among the community elderly in Nagai City, Japan.*

	GDS ≥ 6 (n=206)	GDS ≤ 5 (n=117)	Estimated prevalence(%) [†]
Major depression	2	1	0.9
Dysthymia [‡]	4	0	0.5
Bipolar disorder	0	0	0.0
Adjustment disorder with depressed mood	10	4	3.8
Other types of depression	22	0	2.5

* The cases of major depression, dysthymia and bipolar disorder were diagnosed using the SCID. Others were diagnosed using additional unstructured clinical interviews by psychiatrists.

[†] The numbers are for current dysthymia with its symptoms for more than half of the previous 2-year period.

[‡] Estimated considering the sampling design and non-respondents (see text for the detail).

Table 4 Sex and age distribution of numbers of cases and estimated 1-month prevalence of mood disorders according to DSM-III-R*

		Total examined	Major depression	Dysthymia [†]	Adjustment disorder with depressed mood	Other types of depression
Scored 6 or more on GDS	men	75	0	2	1	10
	women	131	2	2	9	12
	≤74	113	0	3	7	13
	≥75	93	2	1	3	9
Scored 5 or less on GDS	men	51	0	0	0	0
	women	66	1	0	4	0
	≤74	79	0	0	2	0
	≥75	38	1	0	2	0
Estimated prevalence	men		0.0%	0.5%	0.3%	2.6%
	women		1.5%	0.4%	6.3%	2.5%
	p value		0.428	0.964	0.031	0.485
	≤74		0.0%	0.5%	3.2%	2.2%
	≥75		2.4%	0.4%	4.6%	3.2%
	p value		0.132	0.757	0.862	0.845

* This table consists of two parts. The upper portion presents the age and sex distribution of actual number of cases of each depression in the two Geriatric Depression Scale (GDS) groups. The lower portion of the table presents the age and sex distribution of estimated prevalence of each depression with p value of Mantel-Haenszel χ^2 test for controlling the effect of stratified procedure.

[†] The numbers are for current dysthymia with its symptoms for more than half of the previous 2-year period.

lay interviewers. The assessment by lay interviewers is accurate only if a wide range of questions are asked so that other diseases can be excluded. In Kawakami et al., cases of other diseases might have been diagnosed as major depressive episodes.

Of the three studies that reported prevalence rates similar to ours, Henderson et al. reported a point prevalence rate of 0.4%,⁷⁾ although the survey was conducted by lay interviewers. This result may be attributed to the structured interview methods which were more comprehensive than that of Kawakami et al. However, because the age distribution of ≥ 70 in Henderson's study was higher than ours, comparing their prevalence and ours might be difficult.

Of the other studies with low prevalence rates, Komahashi et al. reported a point prevalence rate of 0.4%,¹¹⁾ and Lobo et al. reported a 1-month prevalence of 1.0%.¹²⁾ The age distributions of both studies were similar to ours. Their diagnoses of major depression were assessed by psychiatrists, precisely according to DSM-III-R, as were ours. The difference between point prevalence and 1-month prevalence can be ignored. However, Komahashi et al. did not use structured interview methods, and the structured interview methods used by Lobo et al. were not developed specifically for the DSM-III-R diagnosis.²³⁾ These factors might have affected the reliability of the diagnoses, although psychiatrists were unlikely to have misdiagnosed other conditions as major depression.

Although we used the structured interview methods, our study has some methodologic problems as well: the rate of valid responses to the GDS was low, the rate of refusal of a psychiatrist's interview was relatively high, and the 3-month period between the two phases might have been long enough for depressed people to get better. These problems might have caused the prevalence rate of major depression to be underestimated. Nevertheless, it is significant that the studies of Komahashi et al.¹¹⁾ and Lobo et al.¹²⁾ and the present study reported similar prevalence rates of less than 1%, as each study precisely adopted the same criteria of major depression according to DSM-III-R, used psychiatrists' assessments, and examined subjects of similar age.

The current prevalence rate of dysthymia was 0.5% in the present study. Only three studies have previously reported the prevalence rate of dysthymia.^{7),9),12)} The rate of 4.4% reported by Skoog et al.,⁹⁾ who did not precisely use the criteria of DSM-III-R for dysthymia, was higher than the rate in the present study. Henderson et al.,⁷⁾ who precisely diagnosed dysthymia according to DSM-III-R, reported a rate (0.6%) similar to ours and used a similar investigation period. Lobo et al.,¹²⁾ who also precisely diagnosed dysthymia, reported a rate of 1.3%, although they did not clearly describe the length of their investigation period. What is certain, however, is that the prevalence of dysthymia was much lower than that of major depression in the present study. These results suggest that in the community, few persons have been suffering from depressive symptoms for more than half of a two-year period which is necessary for dysthymia to be diagnosed.

We reported the 1-month prevalence of 3.8% for adjustment disorder with depressed mood, which is higher than that of major depression or dysthymia. Until now, few studies have reported prevalence rates for types of depression other than major depression or dysthymia as defined in DSM-III-R. The only reported 1-month prevalence for adjustment disorder with depressed mood, 2.5%, was also higher than that of major depression or dysthymia.¹²⁾ The similar results in both studies may be useful for planning mental health services. However, we must consider that the cases of adjustment disorder with depressed mood in this study were not diagnosed by means of the structured interview methods.

We reported the 1-month prevalence of other types of depression to be 2.5%. Some of previous researchers tried to examine the prevalence of other types of depression in addition to major depression and dysthymia.^{7),11)} However, the results of the present study cannot be compared with those of other studies, because the definition of other types of depression in each study varied. In the present study, the prevalence of other types of depression was lower than that of adjustment disorder with depressed mood. The cases of other types of depression might have been related to physical problems, as explained in the 'methods'. Some studies

insist that the influence of physical problems on depression should be considered, especially in the elderly.⁸⁾ On the other hand, adjustment disorder with depressed mood is, according to its definition, related to psychosocial events.⁶⁾ The fact that adjustment disorder with depressed mood had higher prevalence than did other types of depression may suggest the importance of psychosocial events, in addition to physical problems, on the mental health in the elderly. However, because the number of physically frail persons among those who did not respond to psychiatrists' assessment may have been higher than that among those who did respond, our reported prevalence of other types of depression might be lower than the actual value.

Although the present study found that the prevalence of major depression tended to be higher in women than in men, a statistical difference was only recognized in the prevalence rate of adjustment disorder with depressed mood. The preceding studies which precisely used the DSM-III-R criteria reported that the prevalence of major depression and dysthymia was higher in women than in men.^{7,11)} The findings of the present study and preceding studies seem to be inconsistent. However, comparing our study with previous studies is difficult as the differences in prevalence between the sexes were small (major depression: 0.2% for men and 0.6% for women; dysthymia: 0.2% for men and 0.9% for women;⁷⁾ and major depression: 0.3% for men and 0.4% for women¹¹⁾) and the statistical significance was not reported in previous studies. On the other hand, it may be important that the prevalence of adjustment disorder with depressed mood was higher in women than in men, as the result may suggest that some psychosocial events are more strongly related to this disorder in women than in men. However, the higher percentage of women who did not respond to psychiatrists' assessment among those scoring 6 points or more on the GDS might affect the sex-specific prevalence in this study.

A statistical difference in prevalence by age group was not seen in each category of depression. Previous studies that precisely used the DSM-III-R criteria did not report age-specific prevalence rates for any type of depression.^{7,11,12)} The present findings may suggest that age is not necessarily a risk factor for depression in the elderly. However, the number of subjects and

cases in each age group as well as in each sex group in this study might be too small to draw definite conclusions about differences among groups. Additional studies with a larger population are necessary.

Using psychiatrists' assessment with the SCID, we investigated the prevalence of DSM-III-R depression among the elderly in Japan. Both the 1-month prevalence rate of major depression and the current prevalence rate of dysthymia were about 1% or less and agreed with the rates reported in previous studies performed in Japan and Europe in which cases were precisely diagnosed by psychiatrists according to DSM-III-R without structured interviews for it. Considering these prevalence rates and the rapid increase in the elderly population in Japan, the number of persons with major depression or dysthymia is expected to increase. Therefore, to ensure that adequate mental health services are available for the elderly, further studies are needed to investigate the incidence, risk factors, and prognosis of mood disorders among the elderly. We also referred to the prevalence of adjustment disorder with depressed mood and other types of depression and their rates were not low. However, we diagnosed cases using additional unstructured clinical interviews. It is expected that the prevalence of these diseases will also be explored using structured interview methods for DSM-III-R.

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