

Epidemiological Study of Old Age Mental Disorders in the Two Rural Areas of Japan

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Abstract: Epidemiological investigations of mental disorders among the aged population were conducted in two rural areas of the southernmost prefecture of Japan. The population of the people aged 65 and over was 708 in Sashiki Village and 211 in Ikema Island. The prevalence of mental disorders among the aged inhabitants was 6.64% in Sashiki Village and 3.79% in Ikema Island. Dementia in the aging process was found in 5.36% in Sashiki Village and 2.37% in Ikema Island. All cases of dementia were of the simple type, except for a case with a paranoid state in Sashiki Village. There was no case of nonorganic psychotic conditions in both areas, except for the cases of schizophrenic psychosis whose onset occurred at an earlier age.

Key Words: *aged population, epidemiological investigation, prevalence, mental disorders, dementia*

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INTRODUCTION

After World War II, the number of aged people out of the total population in Japan has been increasing rapidly. The percentage of elderly people aged 65 and over was 4.9% in 1950 and 9.1% in 1980. It is estimated that this rate would be over 14% in the year 2000. The same phenomenon can be observed with regard to the percentage of aged people with mental disorders.

Juel-Nielsen and Strömberg³ reported that 31.2% of all beds in psychiatric institutions in Denmark were occupied by elderly people aged 65 and over in 1957, and this figure increased to 43.5% in 1967. Thus, the yearly increase in the number of aged people

with mental disorders seems to be a common phenomenon throughout the world. Kato⁶ reported that the number of psychiatric inpatients in Japan in 1969 was 5.57 times higher than that in 1953, while the number of inpatients from ages 65 to 74 and over 75 years of age was 9.1 times and 8.03 times, respectively, during the same period.

Many reports on the psychiatric epidemiological studies on elderly people are available, but we think that more studies are necessary to set up a better welfare system and management of the mental health for the aged people.

For the psychiatric epidemiological investigation on aged people, two areas in Okinawa Prefecture situated in the southernmost part of Japan were selected, which

were separated geographically and different in the life-style of the people. There was a less exodus of the aged population and the people were very cooperative with this study in both areas. These two areas are known as Sashiki Village and Ikema Island.

REVIEW OF THE TWO AREAS

Sashiki Village is located about 15 km east from Naha City (prefectural seat) on the main island of Okinawa Prefecture. The major industry of the village is the cultivation of sugar cane. The total population of the village was 8,663 as of March 31, 1975 and the number of people aged 65 and over was 708.

Ikema Island is an isolated isle located about 350 km southwest from the main island of Okinawa and about 4 km northwest of Miyako Island. Most of the people are engaged in both agriculture and fishery. Deep-sea fishing occupies a very active part in fishery and most of the men have the experiences in ocean navigation. The total population was 1,471 as of March 31, 1979 and there were 211 people aged 65 and over.

MATERIALS AND METHODS

The point-prevalence method was adopted for this epidemiological study, and all of the inhabitants aged 65 and over in Sashiki Village and Ikema Island were psychiatrically and socio-psychologically investigated. The main investigation was conducted in April of 1975 in Sashiki Village and in March of 1979 in Ikema Island.

A preliminary investigation was carried out for one year before each of the main investigations. At each investigation, the aged people were asked to assemble in the Public Hall where medical and psychological examinations were done. For those who could not attend, a home visit was made. As to the persons in whom mental disorders were found, a long-term follow-up has been done. Each investigation was conducted by

the same three psychiatrists, several public health nurses, nurses of the psychiatric department, laboratory technicians, students of the faculty of public health and village office staffs.

CLASSIFICATION AND DIAGNOSTIC CRITERIA

In this study, the classification of psychiatric diagnosis was based on the International Classification of Diagnosis (9th revision). However, in this study, regarding dementia which was found most frequently among the aged inhabitants with mental disorders, the following criteria were adopted to compare with the results of other similar kinds of studies.

Dementia was divided into two parts—slight dementia and severe dementia, depending on the degree. Slight dementia shows a decline in intellectual abilities which exceed what to be expected in the chronological ages and the most important clinical feature is the impairment of short-term memory. Forgetfulness and a slight decline in the level of interest and performance are seen in daily life. Usual conversations are generally possible but poor in contents. The ability to understand is also slightly impaired. Affect and mood are somewhat unstable. However, basic personality and insight are practically preserved. The aged in this state are able to take care of themselves in their familiar environment, but some help is needed in other environments.

At the time of the main investigations, most of the elderly people in this state were not diagnosed as dementia because the impairment of intellectual abilities was slight to a certain degree, and the progressive deteriorating course was not clear in them. Then, this state was temporarily called slight mental deterioration at the time of this main investigation and the definite diagnosis was made after the follow-up of one year and more.

Severe dementia shows a highly remark-

able impairment of intellectual abilities and conspicuous instability of affect and mood than those of slight dementia. Also observed were disorientation, delirium, change of personality and progression of mental deterioration. The aged in this state cannot live even in their familiar environment without any help.

According to Karasawa,⁴ slight dementia in this study corresponds to global intellectual deterioration to a slight degree and severe dementia corresponds to a moderate, severe and heavily severe degree.

Also, dementia in the aged process is classified etiologically into two categories of senile dementia and cerebrovascular dementia. In some severe cases of dementia, it was difficult to differentiate between senile and cerebrovascular dementia, but in this study,

we decided to classify them under the former or latter category depending on their clinical symptoms and findings after the follow-up of one year.

RESULTS

1) *Sashiki Village*

The prevalence of mental disorders in the population of aged people was 6.64%.

Severe dementia in the aged was found in 27 cases. Among the 27 cases, severe senile dementia was observed in 8 cases of which 7 were dementia of the simple type and one showed a paranoid state related to Shamanism of the Okinawa area. Severe cerebrovascular dementia was observed in 19 cases and all of them were of the simple

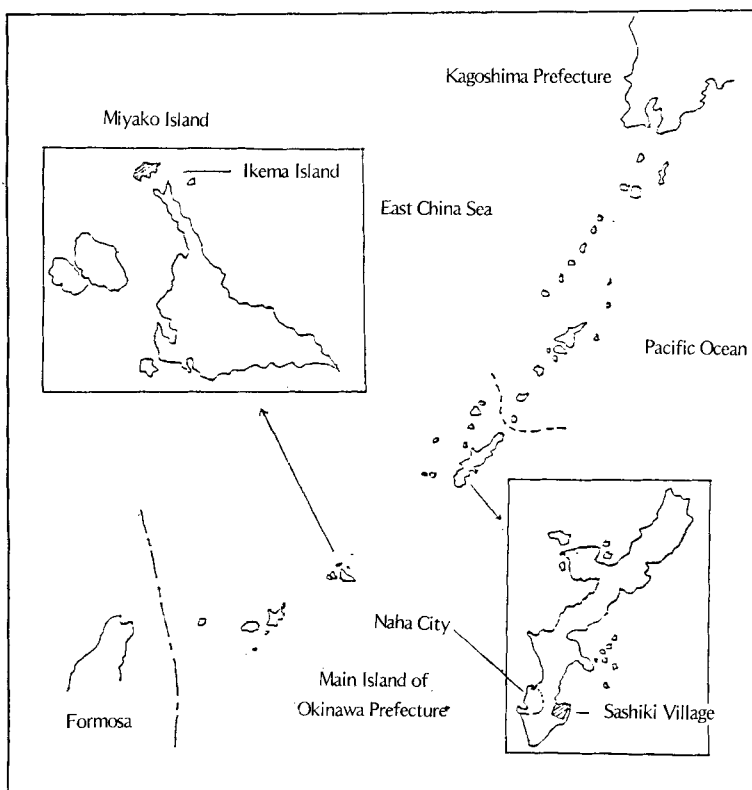


Fig. 1: Location of Sashiki Village and Ikema Island.

Table 1: Mental Disorders Found in the Aged Population of Sashiki Village

Diagnosis	Age Population									
	65-69		70-74		75-79		80 & over		Total	
	M n=95	F n=14	M n=66	F n=141	M n=61	F n=82	M n=46	F n=103	M n=268	F n=440
Severe dementia*	3	1	1	5	2	2	3	10	9	18
Slight dementia*	—	—	2	—	—	1	2	6	4	7
Other dementia	—	—	—	—	1	—	—	1	—	2
Mental retardation	2	—	—	—	—	—	—	—	2	—
Epilepsy	—	—	—	—	—	—	—	—	—	—
Alcoholic psychoses	1	—	—	—	—	—	—	—	1	—
Neurotic disorders	—	—	—	—	—	—	1	—	1	—
Schizophrenic psychoses	1	1	—	1	—	—	—	—	1	2

M: male, F: female, n: number of the aged, *: dementia in aging process.

Table 2: Mental Disorders Found in the Aged Population of Ikema Island

Diagnosis	Age Population									
	65-69		70-74		75-79		80 & over		Total	
	M n=22	F n=58	M n=15	F n=35	M n=17	F n=27	M n=8	F n=29	M n=62	F n=149
Severe dementia*	1	—	2	1	—	—	—	1	3	2
Slight dementia*	—	—	—	—	—	—	—	—	—	—
Other dementia	—	—	—	—	—	—	—	—	—	—
Mental retardation	—	—	—	—	—	—	—	—	—	—
Epilepsy	1	—	—	—	—	—	—	—	1	—
Alcoholic psychoses	—	—	—	—	—	—	—	—	—	—
Neurotic disorders	—	1	—	—	—	—	—	—	—	1
Schizophrenic psychoses	—	1	—	—	—	—	—	—	—	1

M: male, F: female, n: number of the aged, *: dementia in aging process.

Table 3: Mean Blood Pressure of the Aged People of Sashiki Village and Ikema Island

Age		Blood Pressure mmHg					
		Male			Female		
		n	Systolic	Diastolic	n	Systolic	Diastolic
65-69	S	78	151.0 (25.5)	81.0 (13.1)	103	153.8 (23.6)	81.6 (12.3)
	I	22	150.9 (22.5)	79.4 (11.3)	54	149.5 (28.4)	81.6 (14.0)
70-74	S	55	154.5 (26.4)	83.0 (14.0)	111	161.8 (24.6)	85.4 (14.1)
	I	15	155.5 (22.6)	81.9 (14.5)	34	146.0 (22.9)	79.0 (13.8)
75-79	S	53	157.4 (21.5)	79.6 (12.6)	72	166.8 (24.9)	86.6 (15.1)
	I	17	158.7 (20.2)	83.0 (10.7)	28	157.3 (24.0)	85.1 (15.3)
80 & over	S	39	158.7 (24.9)	81.2 (13.9)	81	169.9 (26.4)	89.0 (15.3)
	I	8	154.3 (22.3)	78.8 (9.5)	27	143.4 (20.4)	75.7 (11.2)

(): standard deviation, Systolic: mean systolic blood pressure, Diastolic: mean diastolic blood pressure,
S: Sashiki Village, I: Ikema Island, n: number of the aged.

type.

Thirteen cases were classified into slight mental deterioration at the time of the main investigations, and the long-term follow-up has revealed that 11 of the 13 cases were in the state of slight dementia at that time. Of the 11, 2 and 9 cases came under the category of senile and cerebrovascular dementia, respectively, and all of them showed dementia of the simple type. The 2 cases which were not diagnosed as dementia even after the long-term follow-up had been bedridden for long periods, one because of severe rheumatoid arthritis and the other because of severe lumbago. Even after 7 years of follow-up, the progressive mental deterioration was not recognized in these two cases and it was decided that their mental deterioration did not depend on an organic cerebral pathology.

There were two cases of severe dementia caused by head injury along with two cases of mental retardation.

One was in the state of alcoholic hallucinosis and another was in the anxiety state of neurotic disorders. Among the 3 cases of schizophrenic psychoses observed, one male and one female patient, both with the onset of the disease in the 20s, were in the state of paranoid type and residual schizophrenia, respectively, and the remaining one female patient with the onset in her 40s was in the paranoid state.

There were no cases of nonorganic psychotic conditions such as paranoid-hallucinatory, manic or depressive state which had the onset in the old age.

2) Ikema Island

The prevalence of mental disorders in the aged population was 4.27%.

Severe dementia was observed in 5 cases. Among them, 3 cases were senile dementia of the simple type and 2 were cerebrovascular dementia also of the simple type.

There was one case of alcoholic hallucinosis, one of neurotic disorder in the hypochondriac state and another of schizophrenic

psychosis in the residual state with its onset in her 20s.

It was noteworthy that there was no case of slight dementia in this area at the time of this main investigation. Also, there was no case of nonorganic psychotic conditions with the onset in old age.

DISCUSSION

Many studies on the prevalence of mental disorders in aged people in geographically delimited population groups are available. However, it is difficult to assess the results of those studies on the same level because of the difference in the methodology and diagnostic criteria used. Such studies should be planned worldwide on the basis of the same methodology and diagnostic criteria.

Of the mental disorders in elderly persons, dementia shows the highest prevalence and it has been causing a lot of problems in the field of psychiatry and sociology.

In this study, the prevalence of dementia in the aging process was 5.36% in Sashiki Village and 2.37% in Ikema Island. The other studies on the prevalence of dementia in Japan were conducted mainly in the urban districts by the random sampling method and the point-prevalence was found to be 4.6% by Karasawa *et al.*,⁵ 4.8% by Yokoi *et al.*,¹⁶ 4.8% by Hasegawa *et al.*¹ and 5.8% by Shibayama *et al.*¹³ The prevalence rate in Sashiki Village was similar to that in the other studies in Japan, while the rate in Ikema Island was markedly lower than both. In most of the prevalence studies on dementia in other countries, it is classified into two categories of slight and severe degrees.

In this study, the prevalence of severe dementia was 3.81% in Sashiki Village and 2.37% in Ikema Island. Regarding severe senile dementia, the prevalence was 1.13% in Sashiki Village which was close to 1.42% observed in Ikema Island. On the other hand, the prevalence of 2.68% for severe cerebrovascular dementia in Sashiki Village was remarkably higher than that in Ikema

Island which was 0.95%.

One of the characteristic features in Ikema Island was that no female case of severe cerebrovascular dementia was observed. Many factors are considered as the causes of the difference in the prevalence of severe cerebrovascular dementia. As one of the factors, we thoroughly checked the results of the mean blood pressure of the elderly people in both areas and the following feature was observed; the mean systolic blood pressure of both males and females in Ikema Island was lower than that of the inhabitants of Sashiki Village. It was especially low in the females in Ikema Island. No clear interpretation could be established as to why the mean systolic blood pressure of the females in Ikema Island was so low. Multifactorial investigations may be necessary to find an explanation for the phenomenon.

The prevalence of severe dementia in the other studies of Japan was 2.7% by Karasawa *et al.*, 2.2% by Yokoi *et al.*, 2.4% by Hasegawa *et al.* and 2.2% by Shibayama *et al.* The studies on the prevalence of severe dementia in other countries are as follows: Primrose¹² investigated 222 aged urban inhabitants in Northern Scotland and found that 3.6% suffered from senile and arteriosclerotic dementia. Kay *et al.*^{7,8} studied 309 aged people by means of random samplings and 134 people in local geriatric wards and old age homes in Newcastle Upon Tyne in England and reported that 4.6% of these people were in the state of severe senile and arteriosclerotic dementia. Nielsen¹⁰ investigated 978 elderly people on the island of Samsø in Denmark and found that 3.1% suffered from senile and arteriosclerotic dementia. Parsons¹¹ investigated 228 aged inhabitants of Swansea of England and reported that 4.4% suffered from severe organic psychoses including severe senile and arteriosclerotic dementia. Jensen² studied 546 elderly people in a rural district of Scanderborg, Denmark, and found that 1.1% had senile and arteriosclerotic dementia. In these studies, point-prevalence was

used by Kay *et al.*, Parsons and Jensen and period-prevalence was adopted by Primrose and Nielsen.

In the aged persons in Sashiki Village, there were 13 cases which showed the state of slight mental deterioration, while none was found among the aged in Ikema Island. Makiya,⁹ one of the collaborators of this study, differentiated this state from dementia in his paper. He diagnosed only the state of severe mental deterioration as dementia. However, the results of the long-term follow-up revealed that 11 out of the 13 cases of slight mental deterioration in Sashiki Village had been in the state of slight dementia at the time of this main investigation, of which 2 were senile dementia and 9 were cerebrovascular dementia. The remaining two cases had been bedridden for a long time and the progressive mental deterioration has not been observed even after 7 years of follow-up. In another word, they were not classified as dementia.

It is interesting to note that slight dementia was found in 1.55% of the aged inhabitants in Sashiki Village, while none was found among the aged in Ikema Island. Why was there such a great difference in prevalence? We focused our attention on the environment of the life of elderly people in these areas. Sashiki Village is situated on the main island of Okinawa Prefecture about 15 km away from the prefectural seat and the main industry is agriculture. Most of the aged people are warmly treated. Their life was monotonous and lacked mental stimulation in those days. On the other hand, Ikema Island is a small isolated island, and the chief industry is agriculture and fishery. Most of the men are engaged in fishery and deep-sea fishing is their main occupation. The women have to take care of their homes during their husbands' absence. In this island, even the aged are traditionally hard workers. Most of them are engaged in agriculture and coastal fishery. They work until they become very old and do not expect to be supported by their children. In other

words, there is no retirement for the aged people in Ikema Island. Most of them have independent jobs, support themselves and find their life worth living. Such an environment may stimulate the mental activity of the aged and prevent the appearance of clinical symptoms of dementia when the pathological changes of the brain are not so severe.

Slight dementia in this study corresponds to the state of dementia in a slight degree by Karasawa *et al.*, Yokoi *et al.*, Hasegawa *et al.* and Shibayama *et al.* Also, this state corresponds to mild senile and arteriosclerotic dementia by Nielsen, senile dementia (including cerebral arteriosclerosis) in a slight degree by Jensen, brain syndromes in a mild form by Kay *et al.* However, Primrose and Parsons did not divide the degree of dementia into two parts of slight and severe in their studies. The prevalence of this state was found in 1.9% by Karasawa *et al.*, 2.6% by Yokoi *et al.*, 2.4% by Hasegawa *et al.* and 3.6% by Shibayama *et al.* in Japan, while in the European countries, it was found in 15.4% by Nielsen, 7.1% by Jensen and 5.7% by Kay *et al.* The prevalence of this state in Sashiki Village was similar to that in the other studies of Japan, but it was very low in comparison with those in other countries. Such a difference may be due to the difference in the diagnostic criteria and/or statistical methodology used. For example, Nielsen used the period-prevalence method in his study.

No case of nonorganic psychotic conditions was observed in Sashiki Village and Ikema Island, except for the cases of schizophrenic psychoses whose onset of the disease occurred in their earlier age of life. The prevalence of nonorganic psychotic conditions in the other studies was 1.4% by Primrose, 2.4% by Kay *et al.* 3.7% by Nielsen, 2.6% by Parsons and 2.0% by Jensen, while in this study, the rate was 0.42% in Sashiki Village and 0.47% in Ikema Island. The rates in these two areas were very low in comparison with those in the

other studies. Tatsunuma *et al.*^{14 15} reported that psychotic conditions such as the paranoid-hallucinatory, depressive or manic state in the old age might occur under the influence of the situational factors through their whole life even in the case of dementia. Except for a case of severe senile dementia with a paranoid state in Sashiki Village, none of the psychotic states with the onset in old age was observed in these two areas. The fact that such psychotic states hardly occurred in the aged people in both areas would suggest that the life environment in both areas at that time was very favorable for the mental health of the aged people.

Many reports on the psychiatric and socio-psychological studies on the aged are available, but the methodology or diagnostic criterium used is not always the same. If worldwide investigations under the standardized methodology and diagnostic criteria were carried out in the future, the results of such investigations will be extremely useful in planning the management of mental health and welfare activities for the elderly people.

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