

韓國老年學研究

Korean Journal of Research in Gerontology

2002, Vol. 11, 5-25

Health Promotion Plan in Japan toward the Twenty-first Century and Future Prospect on Medical and Health Status for Japanese

Kazuo Ueda

School of Health Science Kyushu University

Fukuoka, Japan

(Abstract) "Health Promotion Plan in Japan toward the 21st Century (健康日本21)" is policy decision-making to determine nu-

A previous version of this paper was presented at the Annual Meeting of the Korean Gerontological Research Society, Kwangju, Korea, October 2002. The author thanks the anonymous reviewers for their helpful comments on an early draft of the paper. Address correspondence to Dr. Kazuo Ueda (上田一雄), President of the Japanese Association for Cerebro-Cardio Vascular Disease Control (社團法人 日本循環器管理研究協議會), 25 Sankyo Building # 305, 48-10 Higashi-Ikeburo, 1 Chome, Toshima-Ku, Tokyo 170-0013, Japan or Director of the Medical Information Health Foundation, 14-30-201 Kamikawabata, Hakata-Ku, Fukuoka 812-0026, Japan or e-mail (ueda@shs.jyushu-u.ac.kr).

Kazuo Ueda

merical value of goal to be achieved until 2010 for total health promotion, the aim of which is to realize healthy and fully active society in the future. Accumulated evidences on health status or actual figures of cardiovascular disease are reduction in both mortality and morbidity of cerebral stroke and no change in both of coronary heart disease. It seems to be idealistic, but risk factors for cardiovascular disease were recently and remarkably changed, that is reduction in prevalence of hypertension, while increase in obesity, glucose intolerance and hyperlipidemia. Meanwhile, with growing number of elderly population, the frequency of dementia or bedridden also increased. Cardiovascular risk factors partially contributed to the occurrence of those miserable conditions. Considering constant expansion of medical expense into account, lifestyle modification is most necessary to stop the progress of this social burden. On the basis of this principle, numerical goal of total health promotion is set-up in the areas of nutrition and food, physical activity and exercise, relaxation and mental health, smoking, alcohol intake, health for teeth, diabetes mellitus, cardiovascular disease and cancer. This paper refers to the background evidence and concrete figures of the plan.

[Key Words: Aging, Alcohol intake, Dementia, Health promotion, Healthy aging, Heart disease, Hypertension, Risk factor, Smoking, Stroke]

Health Promotion Plan in Japan toward the twenty-first Century (健康日本21; HPPJ) is policy decision-making to determine numerical value of goal to be achieved until 2010 for total health promotion by the initiation of the Japanese Ministry of Labor and Health & Welfare, the aim of which is to realize healthy and fully active society in the future. The law of health promotion has been decided in order to progress the plan at the National Diet in summer 2002.

There have been emerging a lot of medical problems and healthy troubles which are impossible to be adopted by the usual

Health Promotion Plan in Japan

medical or public health system, and probably occur under the situation of rapid increasing of elderly peoples and changes in types of disease-construction. This has resulted in the appearance of large senescent society and consequently growing factors to damage quality of life (QOL) for elderly persons such as senile dementia or bedridden due to disability. The circumstances have made medical expense jumped up, and Japanese medical security system is facing a financial rupture, because national or local government and employer's liability insurance covers more than 70% of medical expense. In order to avoid the crisis, it is again necessary to build up healthy and fully active society, and this could be accomplished by the prolongation of healthy aging or longevity (dementia- or disability-free life expectancy).

Many diseases in the senescence which would involve elderly subjects in the impairment of activity of daily life (ADL) such as cerebral stroke, heart disease, cancer and in addition to those, dementia, osteoporosis, obstructive pulmonary disease, respiratory infection, could be caused by the latent condition since middle age. Meanwhile, it was clearly pointed out that diseases or abnormalities induced by habitual life style have been increasing during recent three decades, and recent increase in the prevalence of diabetes and obesity are especially curious. There have been consensus in agreement among various specialists on the importance of preventive medicine to create healthy senescent society.

The most outstanding characteristic of HPPJ is that goals of numerical values for ideal health should be initially achieved by changes or modification of life style rather than medical treatment. Nutrition, diet-intake, exercise, relaxation, smoking and drinking are taken into consideration as a component of life style, and the goal of numerical values are given to each component. In addition,

Kazuo Ueda

decreasing rates of cerebral stroke, hypertension, diabetes, obesity and cancer can be estimated when the goals for each section are completed enough. Basic consideration on the improvement of health condition is called as population strategy, in which an endeavor to shift the total distribution of national indicative parameters of health to favorable state is stressed. This is a little different from high risk strategy commonly introduced by the guideline for treatment of disease such as hypertension, hyperlipidemia, in which only subjects with high values of risk factors are intended to focus.

A number of specialists for public health, preventive medicine, epidemiology and clinical medicine, were gathered throughout Japan as the national committee members at making a policy of HPPJ. A consensus was obtained among committee members that evidence based medicine should be comprehended in the recommendation of HPPJ. A definite evidence, unfortunately, has not been obtained only from Japanese studies, and therefore, journal articles appeared on Medline were also referred.

Information resources in Japan are from vital statistics of Japan such as National Nutritional Survey, National Survey on Cardiovascular Diseases, NIPPON DATA, National Prevalence Study on Diabetes Mellitus, Guideline for Treatment of Hypertension from Japanese Society of Hypertension, Guideline for Treatment of Hyperlipidemia from Japanese Association of Atherosclerosis, and a few epidemiologic studies conducted during half a century in Japan. Some of attractive data from information resources for HPPJ were introduced in this paper, and a concrete goal of numerical value for HPPJ was considered based on the evidence.

Health Promotion Plan in Japan

Method

Descriptive Epidemiology

Vital statistics of Japan and World Health Statistics were referred. The former is published every year by Statistics Bureau of the Japanese Ministry of Labor and Health & Welfare, and the latter is annually delivered by World Health Organization (WHO). We investigated mortality figures for three major causes of deaths, namely, cancer, heart disease, cerebral stroke (CS) and yearly changing pattern in mortality for Japan, Korea, China and western developed countries. For comparison of death rates by year, and also among countries, age-adjusted mortality is used, and real Japanese population or European population was utilized as a standard population. Life expectancy reported every year or every five years by each government was compared among several developed countries as an index for elderly society.

Cross-Sectional Survey

A national nutritional survey (NNS) has been performed every year administrated by the Ministry of Health & Welfare including 13,000 men and women from 130 health center-areas throughout Japan. Questionnaire for 24 hour-diet recall was delivered to each subject, and habitual smoking and amount of daily intake of alcohol and daily amounts of exercise were asked. Anthropometry was also made, and venous blood was drawn for determination of serum total cholesterol and triglyceride. Every ten years subjects participating to NNS have also additionally received examinations of measurement of blood pressure (BP), electrocardiogram (ECG), determinant of high density lipoprotein (HDL), hemoglobin A₁C,

Kazuo Ueda

urinalysis, and past and current medical histories including drug use for hypertension, hyperlipidemia and diabetes mellitus were taken. This survey is called as National Survey on Cardiovascular Disease (NSCD).

Cohort Study to Search Risk Factors for Cardiovascular Deaths

To determine risk factors for cardiovascular disease specified to Japanese by using representative sample throughout Japan, participants to NSCD in 1980 were organized as cohort population for the follow-up study. The underlying causes of death on death-certificates for the deceased from cohort population were examined under permission from the Ministry of Law and by support from the Ministry of Health & Welfare. Risk factors for deaths from cardiovascular disease were totally or type-specifically analyzed at the 10-or 14-year follow-up (NIPPON Data-National Integrated Project for Prospective Observation of Noncommunicable Disease And its Trends in the Aged).

The Hisayama study

Hisayama town is an rural area adjacent to Fukuoka City, the metropolitan of Kyushu island, in where a prospective community study was begun in 1961 with emphasis on detecting the incidence of cardiovascular disease (Ueda, Omae, & Hujishima, 1994a). The 1960 census figures indicated that the number of residents aged 40 or over was 1,841 or 27.6% of the population, almost identical to the Japanese average (28.0%). The annual variation in the population has remained small (less than 4%).

Of a total of 1,841 persons aged 40 or over, 1,658 (90.1%) were recruited from town registries and subjected to the initial

Health Promotion Plan in Japan

screening examination. At that time 25 residents were found to have hemiplegia due to stroke. By October 31, 1961, twelve persons had died or moved out of the area. Since November 1, 1961, excluding these 37 cases, 1,621 persons (707 men & 914 women) over 40 of age have been under observation which includes a biennial recording of BP, ECG, examination of the ocular fundi, and other tests (first cohort).

Members of our study group visited the town at least once a week to maintain contact with physicians and administrative staff of the town hall. Whenever cardiovascular disease occurred each patient was carefully evaluated as soon as possible and the type of cardiovascular disease was determined by a member of our clinical research group. At time a consultation was indicated and ancillary diagnostic studies were made. Some patients with doubtful diagnosis were brought to the university hospital for further examination and diagnostic evaluation including cerebrospinal fluid examination, cerebral angiography, coronary angiography, echocardiogram, radioisotope brain or heart scanning and, recently, computerized tomography (CT) and magnetic resonance imaging (MRI).

When a person died, an effort was made to obtain permission for autopsy from the family. Autopsies were performed at the Department of Pathology of Kyushu University. The total autopsy rate was 82.4% on average during the follow-up period. Since cohort population has gradually diminished and entered the geriatric age group when the follow-up study has continued for long times, we needed to construct a new cohort. For example, a new group of 1,156 persons aged 40 or over was added to the survivors from the original cohort, resulting in a second cohort of 2,135 in 1973.

By the same procedure a third cohort of 2,427 subjects aged 40 or over was established in 1988. Each cohort has been followed

Kazuo Ueda

up after excluding persons with cardiovascular disease at the beginning of the follow-up. We are able, therefore, to compare the incidence of cardiovascular disease and changing pattern in risk factors among three cohorts at the different stage but with same interval during the long term period of continuation of the study.

Results

Descriptive epidemiology

Changing pattern in mortality figures for Japanese estimated by age-adjusted rates calculated in each category of underlying causes of death revealed a specific peculiarity. Deaths from tuberculosis after the world war rapidly decreased, and those from CS were slowly progressive until the mid-1970s, but after that sharply declined, resulting in transferring the top ranking to malignant neoplasm and doing the second ranking to heart disease. A changing pattern in age-adjusted mortality from CS or coronary heart disease (CHD) for Japanese was compared with those for western developed countries, Korea and China, which are reported in World Health Statistics, Annual (Figures 1 and 2).

A large and sharp reduction in mortality from CS for Japanese was outstanding among them, although mortality from CS for western developed countries also gradually decreased. Those for Korea or China recently reported were higher than that for Japan, and showed no decreasing trend. On the other hand, age-adjusted mortality from CHD for western developed countries depicted uniformly decreasing trend, but that for Japan, Korea and China was extremely lower compared to those for western countries, and did not describe at least a definite up-ward curve. It is very interesting that mortality figures from cardiovascular disease for

Health Promotion Plan in Japan

Japan are more similar to those for Korea rather than those for China. Whether this is due to difference in genetic or environmental factor is a further problem to be solved.

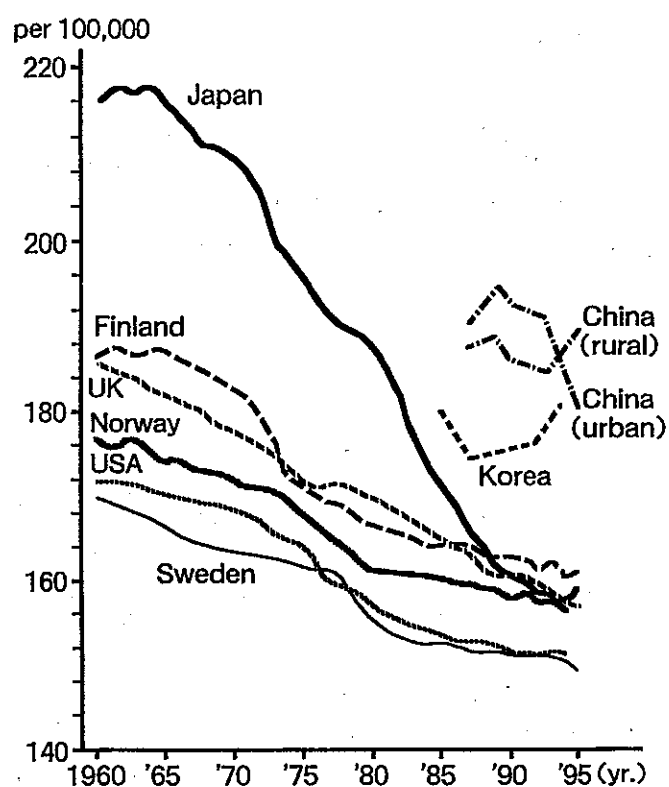


Fig. 1. Comparison of changes in age-adjusted Mortality from cerebrovascular disease among 8 countries in the world, World Health Statistics Annual, WHO

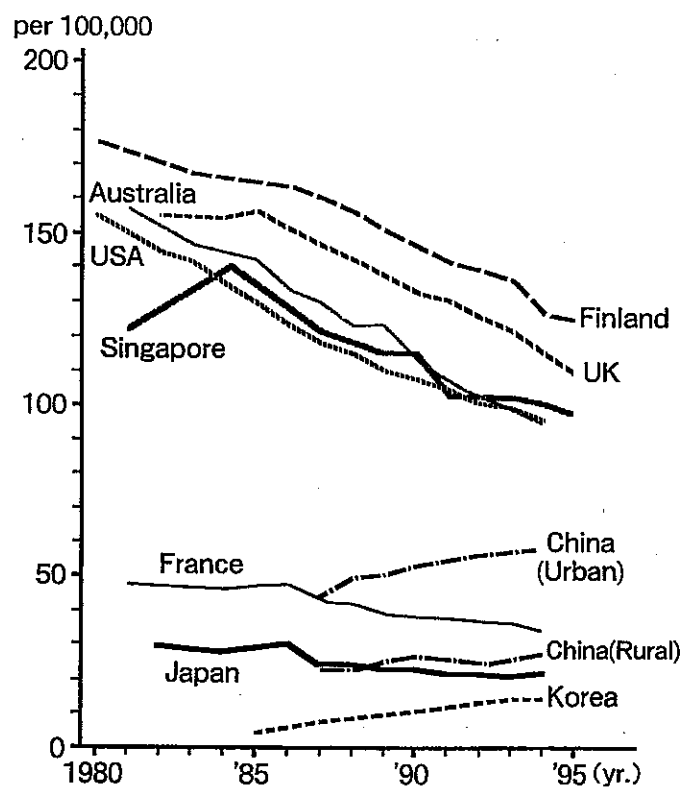


Fig.2. Comparison of changes in age-adjusted mortality from coronary heart disease among 9 countries in the world, World Health Statistics Annual, WHO

Analysis on risk factors for cardiovascular disease

NIPPON data clarified that total deaths from cardiovascular disease increase with both advanced age and elevation of systolic

Health Promotion Plan in Japan

blood pressure (SBP) after age-adjustment based on male follow-up data of 60,440 person-year experience. Dividing cardiovascular disease into CS and heart disease, mortality from CS was dependent in elevation of SBP for those aged 50 or over, but there was no association of CS deaths with SBP for those below 50 years of age. Meanwhile, mortality from heart disease was more closely related to elevation of SBP in younger age-groups under 70 years old. NIPPON data has confirmed that high blood pressure is most important risk factor for cardiovascular mortality, although hypercholesterolemia or smoking is also related to that.

It is rational that risk factors should be analyzed based on the morbidity data. The recent incidence of CS for Hisayama residents during the long-term follow-up was 4.1/1,000 PYE, while that of CHD was 2.2/1,000 PYE and one half of CS. Out of CS cerebral infarction (CI) was four-times higher in incidence than intracerebral hemorrhage (ICH) (Ueda, Omae, & Fujishima, 1994b). This trend was observed at any interval of the follow-up. Risk factors for CI were studied by Cox's Proportional Hazard Model. A significant risk factor of CI for men was age, SBP, ECG abnormalities, and that for women was age, SBP and diabetes mellitus (DM) (Ohmura, Ueda, Kiyohara, et al., 1993a).

DM is a common risk factor for CI, especially in western countries. Figure 3 shows the cumulative incidence of CI during a 22 year follow-up of the Hisayama study for four groups of female subjects stratified by the presence or absence of glucose intolerance or hypertension (Ohmura et al., 1993a; Ueda et al., 1994a). Hypertensives had a higher cumulative incidence of CI than normotensives, and hypertensive diabetics (D) clearly suffered a higher incidence of CI than remaining three groups even after confounding factors were corrected by using Cox's proportional hazard model. A similar trend was also observed in male subjects,

Kazuo Ueda

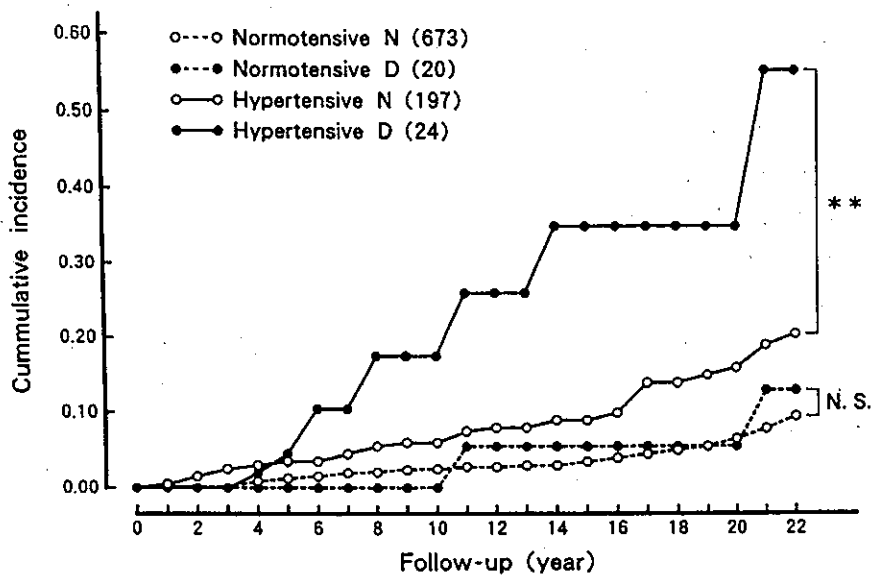


Fig. 3. Cumulative incidence of CI according to the presence or absence of glucose intolerance and hypertension, Hisayama, females, 1961-1983, Cox's Proportional Hazard Model. (from Ohmura *et al* 1993)

D, diabetics; N, nondiabetics; (), cases, age-adjusted. ** $p < 0.01$. Relative risk = 3.05.

but a difference in the cumulative incidence of CI between hypertensive D and hypertensive N failed to reach statistical significance.

Risk factors for CHD were also investigated for 23-year follow-up of the Hisayama study using nine confounding factors by Cox's proportional hazard model (Kiyohara, Ueda, & Fujishima,

Health Promotion Plan in Japan

1990). A significant risk factors for CHD was age, SBP, high total cholesterol (TC) and smoking for men, and age, SBP, smoking and increased BMI for women. The profile of risk factors for CHD is very similar to those reported from the western studies, although the distribution-curve of TC ranged in lower levels compared to that of western population.

In 1988 a 75g oral glucose tolerance test was performed in 2,427 Hisayama residents aged 40-79 years, who were free from a previous history of CS or CHD (Ohmura, Ueda, Kiyoshi et al, 1993b), and this cohort was prospectively followed for 5 years (Fujishima, Kiyohara, Kato et al., 1996). The prevalence of diabetes (DM) among men was 13% and that of impaired glucose tolerance (IGH) was 20%; the corresponding values for women were 9% and 19%, respectively. The age- and sex-adjusted incidence of CI (6.5/1,000PYE, $p < .01$) and CHD (5.0/1,000PYE, $p < .05$) for 5-year follow-up was significantly higher in subjects with DM than in those with normal glucose tolerance (1.9 and 1.6/1,000 PYE, respectively).

In addition, subjects with IGT and DM had a higher risk of cardiovascular disease including CS and CHD than did those with normal glucose tolerance after adjustment for age and sex, namely the relative risk for IGT was 1.9 (95%CI 1.2-3.2), and relative risk for DM was 3.0 (95%CI 1.8-5.2). These associations remained significant even after controlling for six other risk factors including hypertension in multivariate analysis (Figure 4). There would be increasing frequency of overweight or obesity in the background that DM is emerging as an important risk factor for cardiovascular disease for Japanese as well as increasing frequency. Obesity and hypertriglyceride could be strongly related to insulin resistance resulting in hyperinsulinemia and finally in too much consumption and lacking of insulin (DM).

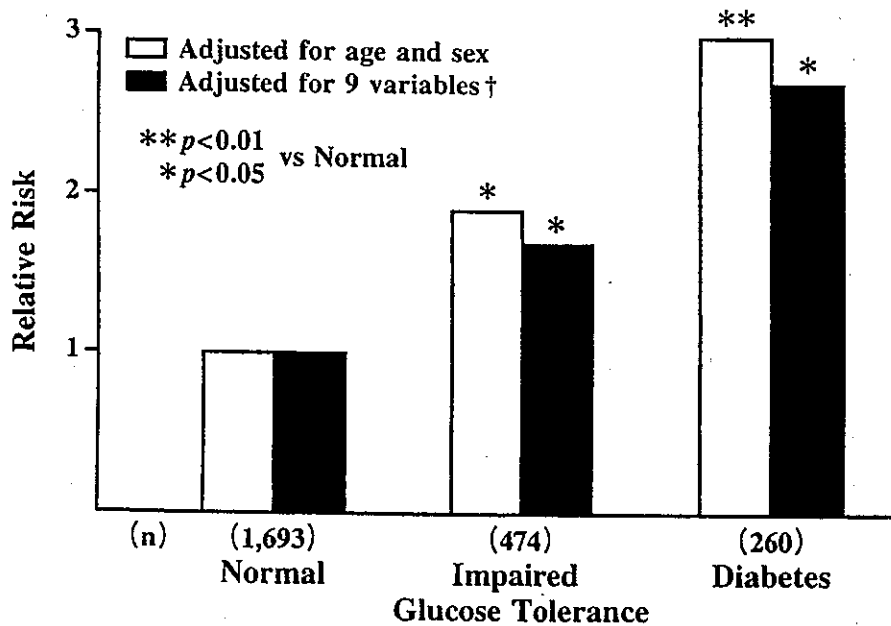


FIG. 4. Relative risks of CVD for IGT and diabetes compared with NGT after adjustment for age, sex, systolic blood pressure, BMI, abnormal ECG, total and HDL cholesterol levels, smoking, and drinking.

Senile dementia and impaired activity of daily life (ADL) in senescent society

We have studied an actual figure of senile dementia in the general population using Hisayama residents aged 65 years old or over in the two stages of the study. We initially studied the

Health Promotion Plan in Japan

prevalence of dementia in 887 Hisayama residents (353 men and 534 women) aged 65 years or older (screening rate 94.6%) using various items of clinical information, neurological examination, and dementia scales in 1985 (Ueda, Kawano, Hasao, et al., 1992). We also studied brain morphology in 50 of 59 determined to have dementia by computerized tomography or autopsy during the subsequent 54-month period.

Factors relevant to dementia were compared between 27 patients with vascular dementia and 789 control subjects without dementia in a retrospective fashion. The prevalence rate of dementia among Hisayama residents aged 65 or older was estimated at 6.7 %, with a female to male ratio of 1:2. Among 50 cases of dementia in which brain morphology was examined, the frequency of vascular dementia was 56 %; this rate is 2.2 times higher than that for senile dementia of Alzheimer type. Aging, hypertension, ECG abnormalities, and high hematocrit were significantly ($p < .05$) and independently associated with the occurrence of vascular dementia. Secondly, we followed 828 non-demented residents of Hisayama aged 65 years or older (88.3% of the elderly population) for 7 years starting in 1985 in order to determine the type-specific incidence of dementia and its risk factors in the general Japanese population (Yoshitake, Kiyohara, Kato, et al., 1995). Only two subjects were lost to the follow-up, during which 103 subjects developed dementia.

Morphologic examination of the brains of 89 subjects (86.4%) was made by autopsy or CT. We made the initial diagnosis of dementia based on the DSM-III-R criteria, with the diagnoses of vascular dementia (VD) being based on the NINDS-AIREN criteria and Alzheimer's disease (AD) on NINCDS-ADRAD criteria. The age-adjusted total incidence (per 1,000 PYE) of dementia was 19.3 for men and 20.9 for women. The corresponding rates for VD were

Kazuo Ueda

12.2 for men and 9.0 for women and for AD, 5.6 for men and 10.9 for women. Multivariate analysis showed that age, prior stroke episodes, SBP and alcohol consumption were significantly independent risk factors for the occurrence of VD. In contrast, age and a low score on Hasegawa's dementia scale were significant risk factors for AD, and physical activity was a significant preventive factor for AD.

On the other hand, there were several surveys on the frequency of impaired ADL and associated factors to be considered as another serious problem in senescent society. One study included a large population and was organized by the Japanese Association for Cerebro-cardiovascular Disease Control (JACD) (Ueda, Iimura, Sawai, et al., 1999). Questionnaires originally constructed by JACD were sent by mail or public nurses direct interview were performed on 6,383 subjects aged 65 years or over drawn as a sample from the residents in 12 communities throughout the Japan, from Hokkaido in the north to Okinawa in the south.

Even though study group included many healthy old people living independently in own home, more than 90%(90.1%) of the subjects answered to be fully independent for ADL, but ADL and QOL deteriorated linearly with advancing age, and the figures were partially related to various underlying diseases which were commonly observed in the aged, such as CS, senile dementia, senility and so on. Impaired ADL was related to an inhibition in desire and participation in social activity, which resulted in losses in feeling of satisfaction in daily life, happiness and worth in living. Admission to hospitals or nursing homes, or utilization of medical care and welfare service did not appear to always improve QOL in the aged with disability of ADL.

Health Promotion Plan in Japan

Discussion

In the twenty-first century senescent society which we have not experienced, will appear in Japan. To make this society vivid and healthy, it is essential that numbers of dementia or bedridden should be reduced since such a condition is expected to give financial or structural burden to both individuals and society. In this aspect total health promotion from youth or middle age is urgently needed. Health promotion plan in Japan toward the 21st century is aimed at preventing diseases commonly observed in the prime of life by improvement of life style rather than medical procedures.

It is noteworthy that diseases caused by change in life-style in cardiovascular area are growing among Japanese, especially metabolic disorders such as obesity, glucose intolerance are increasing. Meanwhile, the incidence of CS strongly related to hypertension has decreased, but control of hypertension is still important to prevent CHD or vascular dementia in the old age. From this point of view, numerical goal of health promotion in this plan was recommended in nine areas as follows.

1. Diseases closely related to nutrition were obesity, hypertension, hyperlipidemia, CHD, DM, osteoporosis and cancer (colon, esophagus, stomach, breast), and dietary pattern to increase risk factor is excess-intake of energy, fat and sodium, and lack of potassium, vitamin and calcium. Therefore, goals of dietary intake are; fat intake less than 20% of total energy; sodium intake less than 10g a day; vegetable intake more than 350g a day; more calcium containing food (e.g., milk, dairy products, green-yellow vegetable). There have been evidences reported that SBP was not elevated with advanced age in the low salt community in the world such as Yonomano Indian in Brazil and hypertension was

Kazuo Ueda

not found in those taking sodium less than 3g a day by INTERSALT study. The reason why limitation of sodium intake is recommended to be 10g a day for Japanese, is due to the consideration of the benefit of traditional Japanese diet in which fish-food cooked by soy source or miso is more likely utilized.

2. Goal of increasing physical activity; persons taking 10,000 steps a day must be increased to 37% from 29% in men, and to 30% from 22% in women. Also an exercise consuming 2,000 Kcal a week is recommended.

3. Goal of reduced smoking; smoking rates at present should be reduced in 50% for both men and women, and for both adults and those younger than high school students. Total amounts of cigarettes smoked a year should be also reduced in 50%. The systems to divide smokers from non-smokers, and to support quitting smoking should be promoted.

4. Goal of reduced DM; no numerical goal is set up, but a strategy is pointed out, namely, subjects with ideal weight, taking appropriate diet, doing exercise should be increased, and rates of receiving screening examination should be graded up.

5. Strategy for lowering SBP equal to or more than 4.2 mmHg in average; decreasing sodium intake to less than 10g a day from 13.5g; increasing potassium intake to 3.5g a day from 2.5g; decreasing prevalence of obesity to less than 15% in men and 18% in women; decreasing subjects taking alcohol more than 60g a day to less than 1%; increasing population taking a walk in the early morning to more than 10%.

6. Strategy for reduction in cardiovascular disease; reduction in CS is expected to be 16% in men, and 6 % in women, and corresponding rate in CHD is 11% in men, 7% in women if SBP is successful in lowering of 4.2 mmHg or more ;additional effects of reducing smoking rates on reduction in cardiovascular disease are

Health Promotion Plan in Japan

55% reduction in CS in men, 24% in women, and 50% for CHD in men, 26% in women.

We are encouraged to achieve these goals in the future to create healthy society in the 21st century.

References

- Fujishima, M., Kiyohara, Y., Kato, I., Ohmura, T., Iwamoto, H., Nakayama, K., Ohmori, S., & Yoshitake, T. (1996). Diabetes and cardiovascular disease in a prospective population survey in Japan: The Hisayama study. *Diabetes*, 45 (suppl. 3), S14-S16.
- Kiyohara, Y., Ueda, K., & Fujishima, M. (1990). Smoking and cardiovascular disease in the general population in Japan. *Journal of Hypertension*, 8 (suppl 5), S9-S15.
- Ohmura, T., Ueda, K., Kiyohara, Y., Kato, I., Iwamoto, H., Nakayama, K., Nomiyama, K., Ohmori, S., Yoshitake, T., & Shinkawu, A. (1993). The impact of glucose intolerance on stroke incidence in a 22-year follow-up study of the general population: The Hisayama study. *Journal of Japanese Diabetes Society*, 36, 17-24. (in Japanese with English abstract) (a)
- Ohmura, T., Ueda, K., Kiyohara, Y., Kato, I., Iwamoto, H., Nakayama, K., Nomiyama, K., Ohmori, S., Yoshitake, T., & Shinkawu, A. (1993). Prevalence of type 2 (non-insulin-dependent) diabetes mellitus and impaired glucose tolerance in the Japanese general population: The Hisayama study. *Diabetologia*, 36, 1198-1203. (b)
- Ueda, K., Omae, T., & Fujishima, M. (1994). Hypertension and other risk factors for cerebral stroke: Longterm observations in a Japanese community. In A. Yamamoto (Ed.), *Multiple risk factors in cardiovascular disease* (pp. 99-105). Tokyo: Churchill

Kazuo Ueda

Livingstone. (a)

Ueda, K., Omae, T., & Fujishima, M. (1994). The Hisayama study: A 30-year experience on stroke epidemiology in Japan.

Hypertension Research, 17 (suppl 1), S11-S21. (b)

Ueda, K., Kawano, H., Hasuo, Y., & Fujishima, M. (1992). Prevalence and etiology of dementia in a Japanese community.

Stroke, 23, 798-803.

Ueda, K., Iimura, O., Sawai, K., et al. (1999). Actual state of activity of daily life and quality of life in Japanese old people.

Japanese Association for Cerebro-cardiovascular Disease Control, 34, 64-71. (in Japanese with English abstract)

Yoshitake, T., Kiyohara, Y., Kato, I., Ohmura, T., Iwamoto, H., Nakayama, K., Ohmori, S., Nomiya, K., Kawano, H., & Ueda, K. (1995). Incidence and risk factors of vascular dementia and Alzheimer's disease in a defined elderly Japanese population: The Hisayama Study. *Neurology*, 45, 1161-1168.

Health Promotion Plan in Japan

일본의 21세기 건강증진계획 및 일본인 건강상태의 전망

Kazuo Ueda (上田一雄)

Division of Internal Medicine

School of Health Science Kyushu University

Fukuoka, Japan 812-8582

본고는 일본의 후생노동성에서 발표했던 “健康日本21”이라고 부르는 21세기 종합적인 일본의 건강증진계획이 제대로 실천되기 위한 이론적 배경을 설명하고 있다. 그동안 축적된 심혈관계 질환의 사망률이나 이환율에 관한 자료들을 토대로 뇌졸중이나 심장질환과 같은 질환의 위험인자들이 고혈압이나 비만, 고지혈증 등과 관련이 높음을 지적하였으며, 아울러 노인인구의 증가로 심혈관계질환으로 고생하는 환자뿐만 아니라 외상노인이나 치매환자도 늘어나고 있음을 지적하였다. 이와 같은 노인환자의 증가는 의료비 부담의 증가를 초래하는데, 의료비 부담과 같은 사회적 부담을 줄이기 위해서 심혈관질환이나 암 등의 위험인자로 꼽히고 있는 흡연, 정신건강, 음주, 치아건강, 당뇨병, 심장질환, 암, 영양섭취, 신체적 운동 등에서 생활양식의 변화가 필요하다는 점을 강조했다.

(논문접수일: 2002년 9월 15일)

(수정논문접수일: 2002년 10월 25일)

(논문게재승인일: 2002년 11월 11일)

