Healthy Lifestyles: a historical perspective

TAKEO WADA, MD, PHD *

Introduction

Concerning Healthy Lifestyles, we should first note that a sound, peaceful and happy life has always been one of the most strong human instinctive desires and also regarded as the concept most relevant to human life since the age of primitive civilization (Table 1).

Rene Dubos[1] commented on the concept of homeostasis, insisting that it was an ideal and sometimes a vision which reflected a static view of the world. In fact, this view was not applicable to the real dynamic world, in which living conditions were in a constant state of flux.

This perspective is substantially analogous to such an abstract concept or theory. Therefore, I will approach first by providing a few reports and statistics related to socio-medical conditions of the islands in the Pacific, entrusted by the League of Nations (LN) to Japan during the period from the end of the First World War (1914) to the end of the Second World War (1945). Then, I will quote and discuss statistical data of health and medical status in Japan before and after the Second World War. Now the islands formerly under the LN trusteeship by Japan have gained their political independence, and developed so remarkably as to hold such a substantial medical conference among countries in the area of the Pacific Basin[2].

* *Ex-President and Emeritus Professor, Sapporro Medical University, 1-35 S-15 W-9 Chuoh-Ku, Sapporro, 064, Japan.* *The text of this article is adapted from a Special Address at the Second Pacific Basin Medical Association Conference, Republic of Palau, 13-15 May 1996. Dr. Wada was a Japanese naval air force surgeon in Palau and Yap during 1941-1942.*

Historical view of statistics

These statistics are of the population and health care status in the islands under League of Nations (LN) Trusteeship by Japan: Saipan, Tinian, Rota, Yap, Palau, Truk (Chuuk), Ponape (Pohnpei), and Yalut (Jaluit, Marshall Islands).

The records which I referred to concerning the population and health status of the people of these islands were sporadically found in the Statistical Yearbook[3] of the South Sea Prefectural Government, which was formerly called *Nanyo-Cho* by the Japanese Government. Results of medical condition research were cited, as much as possible, from the Medical Reports series in the South Sea Archipelago.

Table 1. Concepts related to health and lifestyle

	Period	Remarks
Arcadia	*Greek era*	A masterpiece of N. Poussin (1638) was named "Arcadian shepherd" with the words "I had lived in Arcadia".
Hygeia	*Greek era*	Mythological 'goddess of health'. It expressed 'City of health' and was theorised later by Max v. Pettenkofer (1850) and by B. W. Richardson (1875).
Utopia	*1516*	Sir Thomas More described an imaginary island as a seat of perfection in moral, social and political life. This was thought to be common to the healthy life.
Orthobiosis	*1908*	A theory set up by E. Metchnikoff. Health and life will be controlled with the balanced condition of the intestinal flora.
Homeostatis	*1929*	Walter B. Cannon introduced a theory of 'homeostasis'. This was a restoring process in the internal environment of the body to the steady or resting state, physiologically and biochemically. It was published in 1932 as 'The Wisdom of the Body' (N.Y., Norton).

Population in 1939: One of the well-completed examples of the population statistics of the islands was Table 2, published in 1939. The islands were populated in the decreasing order of Saipan, Palau, Truk, Ponape, Yalut, and Tinian. It is obvious that Pacific Islanders thickly inhabited Truk, Ponape, Yalut and Yap while the Japanese densely populated Saipan, Tinian and Palau, according to the Japanese Government policy to promote the agricultural industry in Saipan and Tinian and to set up the administrative management office (*Nanyo-Cho*) in Palau.

Population pyramids in 1936: The population of each area is shown in Figure 1 (a). Age distribution of the population in

the islands of Saipan, Yap, Palau, Truk, Ponape and Yalut in 1936 are illustrated in the population pyramids by both Islanders and Japanese (Figure 1 (b)).

The pyramid of Islanders was narrow and tall, and that of Japanese looked like a shape of a volcano eruption, with the wide base suggesting a large number of children, the narrow concavity at the school age resulting from the decrease of their number, the wider side-view corresponding to the increase in the number of people between twenties and forties.

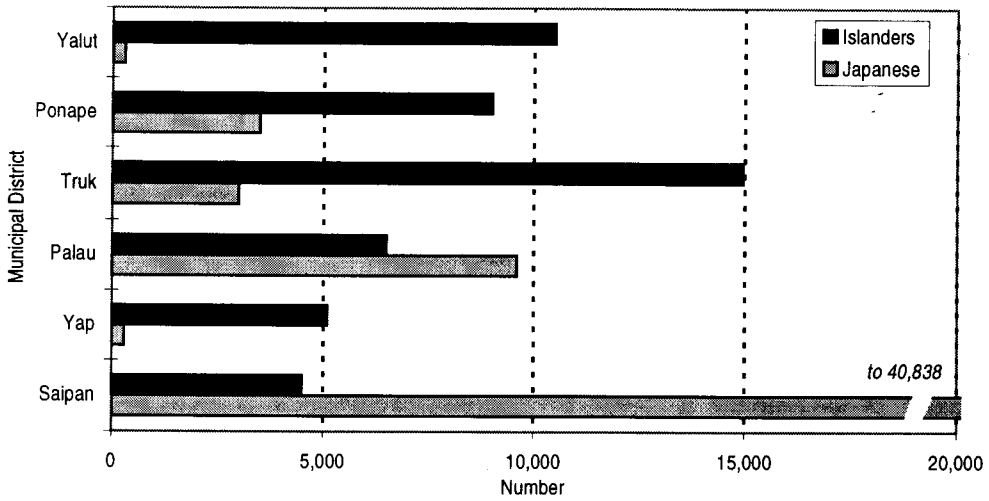
Health care services: The Japanese Government introduced *strategies for health care delivery adapted to each* island's condition. Primary health care service was provided through *Nanyo-Cho*, the Prefectural Government, with hospitals, general physicians and/or surgeons, and nurses in each main island. Nursing education and training was also conducted in several islands (Photos 1 - 4).

Table 2. Populations of the LN* Trust Islands in the South Pacific (1939)

	Islanders	Japanese	Total
Saipan	3708	24602	28310
Tinian	13	15685	15702
Rota	770	3591	4361
Yap	5733	1719	7452
Palau	6543	20764	27307
Truk	15358	3678	19036
Pohnpei	9458	6722	16180
Yalut	10138	618	10756

** League of Nations*
Source: Statistical Yearbook of the South Sea Islands. Vol 1 ~ 9. Pub. 'Nanyo-cho'. 1933 - 1941.

Figure 1 (a). Population of each municipal district, 1936



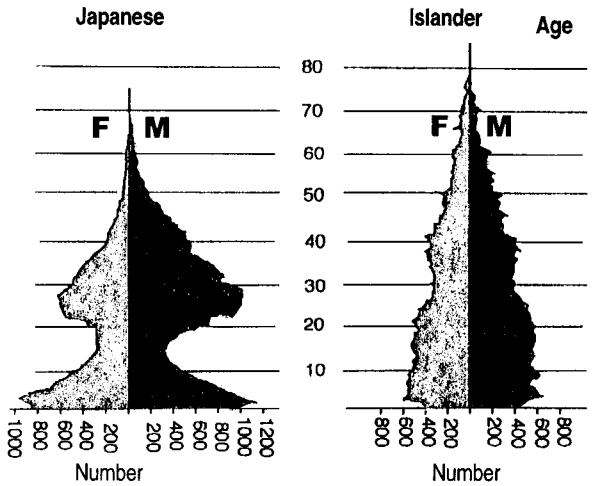


Figure 1 (b). 'Population pyramids: Age distribution of population of Islanders and Japanese, by sex, Oct. 1 1936

Health status of the people: The average of the estimated numbers of inpatients and outpatients in the hospitals per month in 1939 is indicated in the Table 3. In general, around half of the population of the Islanders and more than 70% of the Japanese, excepting those in Saipan, consulted the doctor on every island.

The higher prevalence was found among gastrointestinal and respiratory diseases, followed by TB and other miscellaneous infectious diseases. As a matter for regret, it was easily suggested at that time that correct classification of diseases was impossible because of the shortage of examination facilities. Accordingly, causes of death in these islands were not so clear in some cases.

Summarizing the data from the statistics of 1939, the main causes of death are listed in the Table 4. It was noticed that more than half of the deaths were caused by infectious diseases, and high rates of neonatal death were found in both Islanders and Japanese.

Historical view of health and medical status in Japan[4]

Statistics of the population: Japan is one of the countries that has undergone the most rapid change in vital statistics during the last half century. The Japanese population from 1950 to 1990 by sex is shown in Table 5. Population growth each year has recently been on the gradual decrease, from 7.04 in 1981 to 6.0 in 1990 per 1,000 population.

Table 3. Number of inpatients and outpatients per month in the municipal hospitals, 1939

	Islanders	Japanese
Saipan	1758 (47.4%)	6879 (27.9%)
Yap	2904 (50.6%)	1313 (75.2%)
Palau	2811 (42.9%)	19238 (92.6)
Truk	5277 (34.5%)	4216 (117.3%)
Pohnpei	4139 (43.7%)	4590 (68.2%)

** Due to prevalence of dengue fever.*
Highly preventive diseases were categorised: Digestive disease (diarrhea, ...), respiratory disease, trachoma, skin disease, infectious diseases (TB, amebiasis, dengue fever, paratyphus, ...), venereal disease.

Table 4. Main death causes of people of the LN Trust Islands of the Pacific, 1939

	Islanders	Japanese
1	Respiratory diseases (34.5%)	Neo-natal deaths (31.3%)
2	Neo-natal deaths (23.5%)	Infectious diseases (28.0%) *
3	Infectious diseases (18.4%) *	Apoplexia
4	Others	Others

** Paratyphus, typhoid fever, dysentery (amoebic, bacillary), sepsis, ... (from Ref. 2)*

Table 5. Japanese population (in 1000's) by sex and the rate of increase, 1950 - 1990

Years	Male	Female	Total	Rate of increase of total (%)
1950	40514	42158	82672	
1960	45566	47275	92841	11.23
1970	50601	52519	103119	11.1
1980	57201	59290	116320	11.26
1981	57594	60291	117884	7.04
1982	58402	60291	118693	6.86
1983	58790	60694	119483	6.7
1984	59155	61080	120235	6.3
1985	59497	61552	121049	6.04
1990	60249	62472	122721	6.08

One of the most influential factors of the above-mentioned phenomenon is the fact[5] that the birth-rate has remarkably decreased by half in recent years, with the rate dropping from 28.1 in 1950 to 11.1 in 1987 per 1,000 population.

On the other hand, the death rate has been decreasing, from 10.8 per 1,000 population in 1950, 6.9 in 1960, 5.2 in 1970, to 3.0 in 1990. Also noted, the infant mortality rate has been on the steady decreasing, from 60.1 in 1950 to 5.0 in 1987 per 1,000 live births, with a neonatal mortality rate of 2.9 in 1987.

In such a favorable medical environment, the mean life-expectancy at birth has remarkably elevated; for male, from 50.06 years in 1947, 59.57 years in 1950-52, to 75.91 years in 1990, and, for female, from 53.96 years in 1947, 62.97 years in 1950-52, to 81.77 years in 1990.

Health and medical status: With regard to the main causes of death in 1945, the year of the end of the Second World War, the principal disease noted was TB, with a death rate of 212.9 per 1,000 population, followed by pneumonia and bronchial diseases and gastrointestinal disease (Fig. 2). However, a clear-cut drop of the death rates from these diseases is noticed in accordance with clinical application of penicillin and streptomycin after 1950. Since then, the principal cause of death has continued to be cerebrovascular diseases. In 1987, cancer became the leading cause of death at a rate of 164.2 per 100,000 population, followed by cardiovascular diseases at the rate of 118.4, and cerebrovascular diseases at the rate of 101.7. These three leading death causes comprise

more than 60% of all diseases (Figure 3), and in terms of disease categorization are called "adult diseases", since these are very common as adult age advances.

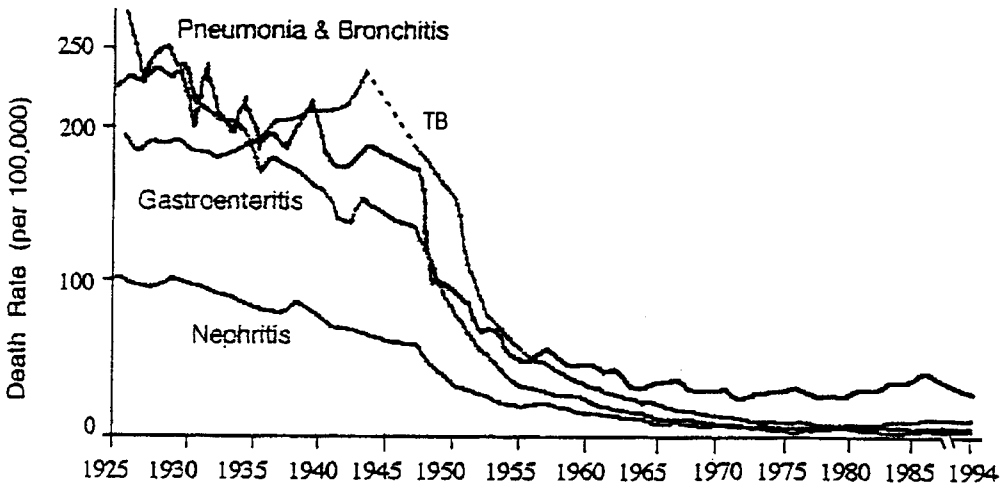
The rate of disease prevalence in Japan has also shown a marked change recently in accordance with its rapid socio-economic growth and its striking development of medicine and public health care. The general rate has increased from 63.6 in 1965 to 287.8 in 1986 per 1,000 population. The highest prevalence is found in cardiovascular diseases, followed by respiratory diseases. The increasing prevalence rate of these diseases seems to parallel the increasing number of aged people.

Discussion

From the patterns of health and disease before and after the Second World War, there has been a common pattern in the diseases of the Pacific Basin and Japan. In recent years, the trends of causes of death and disease prevalence have gradually been shifting from acute to chronic diseases, and from infectious to non-communicable and degenerative diseases.

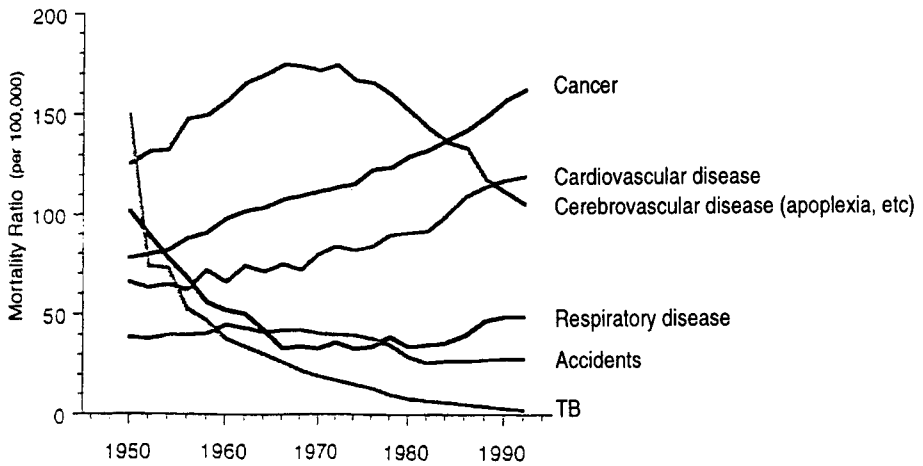
Japan showed a striking prolongation of mean life-expectancy at birth for both sexes. This seems to be closely related to the decline of its death rate, particularly to the neonatal mortality rate. The development of chemotherapy and the

Figure 2. Trend of death rate by leading causes (1925 - 1994)



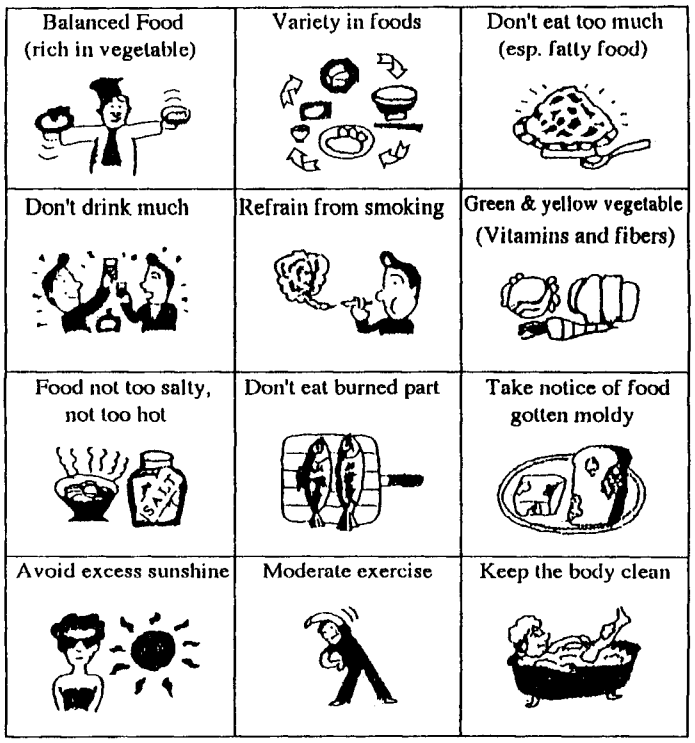
Note: Penicillin (1940) Streptomycin (1944)
Source: Health and Welfare Statistics in Japan: Ministry of Health and Welfare, 1995

Figure 3. Yearly change of the mortality ratio of 'adult diseases', 1950 - 1995



Note: 'Adult diseases' are cancer, cardiovascular and cerebrovascular diseases.
Source: Japan Vital Statistics, Ministry of Health and Welfare, 1995

Figure 4. 'Twelve Point Precautions' for the prevention of cancer



Note: Around 65% of all cancer will be prevented by keeping up a daily lifestyle as shown by the 12 recommended items – 35% by food and lifestyle and another 30% by refraining from smoking.
Source: Figures on Cancer in Japan, 1995. Foundation for Promotion of Cancer Research, 1995

progress of public health services have produced far-reaching beneficial effects in Japan.

For a theoretical consideration regarding the questions 'how to cope with diseases?' and/or 'how to keep a healthy life?', I referred to some scholastic ideas in the earlier remarks, implying that there was something visionary and unscientific in them. I stress that concept or theory should not be neglected, because medical science has progressed from Greek era and through its chaotic state. Health science, in those days, owed much to such concepts as Arcadia and Hygeia (city of health), especially for elaborating health care strategies.

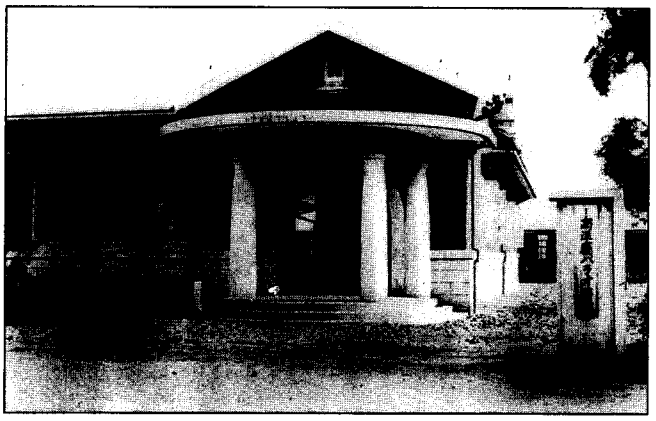
The statistics I referred to apparently indicate a decrease of prevalence of infectious diseases. However, it is impossible to completely eradicate TB, for instance, even in developed countries. Respiratory infections, intestinal infections, venereal infections, etc. may still be prevalent in some Pacific countries. Pathogenetic studies have certainly proven many causes of diseases. However, countries in the Pacific Basin, as well as Japan, have been facing an increase of chronic degenerative and non-communicable diseases, such as cancer, cardiovascular, auto-immune, hepatic and renal diseases, etc. Though medical treatments have successfully developed, we are now confronted with difficult problems brought by the increase of the population of aging people. Viewing the matter from a different standpoint, we have to recognize all over again that human beings are conclusively defined by the interaction between their genetic conditions and their environment.

The only way to keep a healthy life is to promote a safe lifestyle with careful attention paid to 'how to have good control of the genetic conditions' and 'how to keep the environment as clean as possible'. In Japan, by way of illustration (Figure 4), people have been advised of the Twelve Point Precautions in order to prevent cancer[6]. The Twelve Point Precautions are, however, based on the concept that chronic diseases including cancer are lifestyle diseases influenced by aging. By improving life style, we can reduce the risks of cancer from carcinogenic substances or eliminate them from our life. There is no royal road to the prevention of cancer. Paying attention to daily life is the best way to control cancer. Finally, it should be introduced that the essential but simple element to healthy life is the clear recognition of a sound and clean lifestyle.

Photos 1 - 4

1. Municipal hospital in Saipan (1939)

2. Municipal hospital in Palau (1934)



3. Municipal hospital in Ponape (1939)

4. Nurse trainees in Yap (1939)

Conclusion

With the rapid development of medicine and the progress of socioeconomical conditions in Japan during the last half century, the prevalence of diseases and the main cause of death have markedly changed, from acute infectious diseases to chronic, non-communicable and degenerative ones. Accordingly, the medical conditions of the people have changed, as seen in the increasing number of the aging and the decreasing number of the young. Some serious problems have occurred, such as the increasing need of medical care assistance, and the heavy expense of health and social welfare.

Similar problems may be expected in the Pacific Basin countries. It is advisable, however, to devise a new approach appropriate to the different disease patterns and social conditions in each country.

References

1. Dubos, R. *Man Adapting*. Yale University Press, New Haven and London; 1980.
2. *Second Pacific Basin Medical Association Conference*, Koror, Palau, 13-15 May; 1996.
3. *Statistical Yearbook of the 'Nanyo-cho'* (Mandatory administration office in the South Pacific Ocean), No. 1-9: 1933-1941.
4. Japan Vital Statistics. Statistics and Information Department, Ministry of Health and Welfare: 1992
5. Onodera, N. *Public Health Services in Japan*. Oxford Textbook of public Health. Vol. 1 Chap. 29, ed. by Holland, WW, et al. Oxford University Press: 1991.
6. Figures on Cancer in Japan-1995. Foundation for Promotion of Cancer Research: 1995. □