

**Mortality from  
Cerebrovascular Disease and  
Heart Diseases of  
the Korean Population in Japan  
1963 ~ 1982**

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**Abstract**

Mortality data from cerebrovascular disease (CVD) and all forms of heart diseases (HD) of the Korean population in Japan during the period from 1963 through 1982 were examined using the age-adjusted mortality rates and standardized mortality ratios (SMRs) based on age-specific mortality rates for the 1975 Japanese population. There has been a clear decline in age-standardized mortality rates from CVD over the whole period, whereas the rates from HD have steadily increased in recent years. Mortality rates from both diseases of Korean males in Japan were much greater than those for their female counterparts. During the period 1978~1982, the SMRs for CVD of Korean males and females in Japan fell below 100, whereas SMRs for HD in both sexes remained increasingly over 100.

Key phrases: Mortality from CVD and HD of Koreans in Japan.

**I. INTRODUCTION**

Among Koreans in Japan, cerebrovascular disease (CVD) has become the second leading cause of death since 1965, while all forms of heart diseases (HD) have ranked the third since 1974.<sup>1)</sup> Comparison of these mortality risks of Koreans in Japan with Japanese (host country population) would contribute greatly to the elucidation of changes in a major disease entity among those population groups.

This paper describes the trends in mortality rates from CVD and HD of Koreans in Japan dur-

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1) Y.S. Kim, "Recent demographic development of the Korean population in Japan," *Human Ecol. & Race Hyg.*, 43: 91-102, 1977.

ing the period of 1963~1982. These trends from these major causes of deaths are also discussed whether mortality patterns of Koreans in Japan reveal similar to those of Japanese.

## II. MATERIALS AND METHODS

The data on deaths from cerebrovascular disease and all forms of heart diseases of the Korean population in Japan for the years 1963~1982 were taken from official publication of the Japan Ministry of Health and Welfare.<sup>2)</sup> All forms of heart diseases including chronic rheumatic disease, ischemic heart disease (IHD), and other forms of heart disease were used for the present analysis, because deaths from ischemic heart disease in Koreans in Japan occurred less frequently than in western populations. The different categories of the International Classification of Diseases (ICD) applied to classify the causes of death for alien population in Japan during the periods. Cerebrovascular diseases (CVD), chronic rheumatic heart disease, ischemic heart disease, and other forms of heart disease of Koreans in Japan were studied in rubrics B22, B25, B26, and B27 in the 7th Revision (1958~1967) of the ICD, respectively, and B30, B26, B28, and B29, respectively, in the 8th Revision (1968~1978) of the ICS, and 58~60, 46, 51~52, and 54~56, respectively, in the 9th Revision (after 1979) of the ICD.

The average mortality rates for the four periods of 1963~1967, 1968~1972, 1973~1977, and 1978~1982 were calculated by the annual average number of deaths over a five-year period based on the 1965, 1970, 1975, and 1980 census populations of Koreans in Japan,<sup>3)</sup> respectively. Linear interpolation was used to produce annual midyear population estimates. The annual age-adjusted mortality rates and standardized mortality ratios (SMRs) of Koreans in Japan, based on death rates from CVD and HD of the 1975 Japanese population for each sex, were used as a summary measure of mortality.

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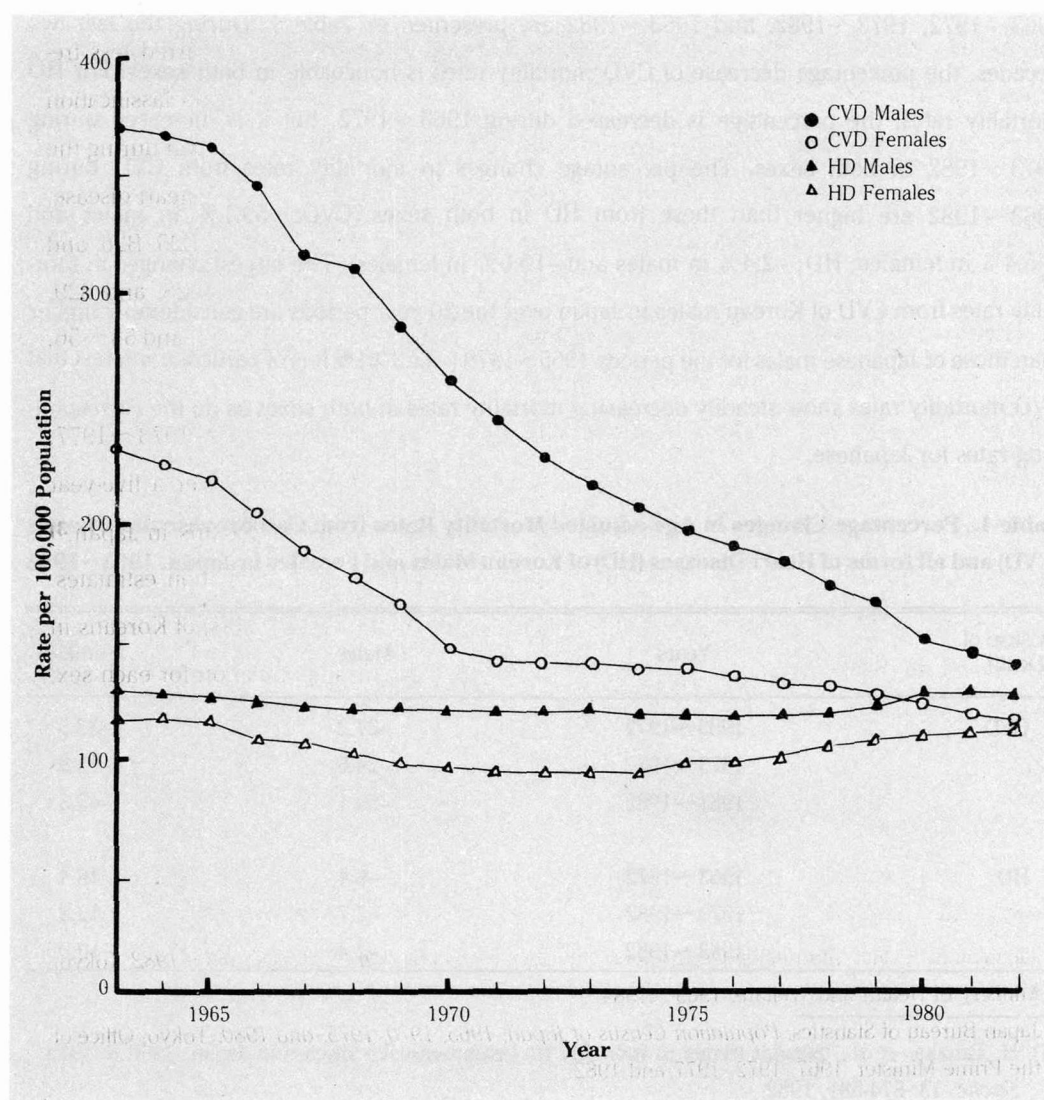
2) Japan Statistics and Information Department, Minister's Secretariat, *Vital Statistics 1963~1982*, Tokyo, Ministry of Health and Welfare, 1965~1984.

3) Japan Bureau of Statistics, *Population Census of Japan, 1965, 1970, 1975, and 1980*, Tokyo, Office of the Prime Minister, 1967, 1972, 1977, and 1982.

### III. RESULTS

The annual age-adjusted death rates from CVD and HD for Korean males and females in Japan for the 20 years of the study period 1963~1982 are shown in Figure 1. Age-adjusted death rates from CVD for Koreans in Japan in both sexes are considerably higher than those

**Figure 1. Secular Trends in the Age-Standardized Mortality Rates from CVD and HD by Sex of Koreans in Japan 1963~1982, based on the 1975 Age-Specific Death Rates of Japanese for each Sex**



from HD during 1963~1970 respectively. Mortality rates from CVD for Korean males in Japan are markedly much higher than for their female counterparts throughout the periods, while male mortality rates from HD are consistently higher than the corresponding rates of females. Mortality rates from CVD in both sexes have shown a sharp decrease from 1963 to 1970. After 1970, females mortality rates tends to decrease more gradually than in males. Male mortality rates from HD have been almost unchanged during 1963~1972, however, mortality rates from HD in both sexes show a slight increase in recent years.

The percentage change values in cross-sectional mortality rates in both sexes for the periods 1963~1972, 1973~1982, and 1963~1982 are presented in Table 1. During the last two decades, the percentage decrease of CVD mortality rates is noticeable in both sexes. For HD mortality rates, the percentage is decreased during 1963~1972, but it is increased during 1973~1982 in both sexes. The percentage changes in mortality rates from CVD during 1963~1982 are higher than those from HD in both sexes (CVD: -59.1% in males and -45.4% in females; HD: -2.4% in males and -10.0% in females). The largest changes in mortality rates from CVD of Korean males in Japan over the 20 year periods are considerably higher than those of Japanese males for the periods 1965~1979 (-42.3%).<sup>4)</sup> It is of particular interest that CVD mortality rates show steadily decreasing mortality rates in both sexes as do the corresponding rates for Japanese.

**Table 1. Percentage Changes in Age-adjusted Mortality Rates from Cerebrovascular Disease (CVD) and all forms of Heart Diseases (HD) of Korean Males and Females in Japan, 1963~1982**

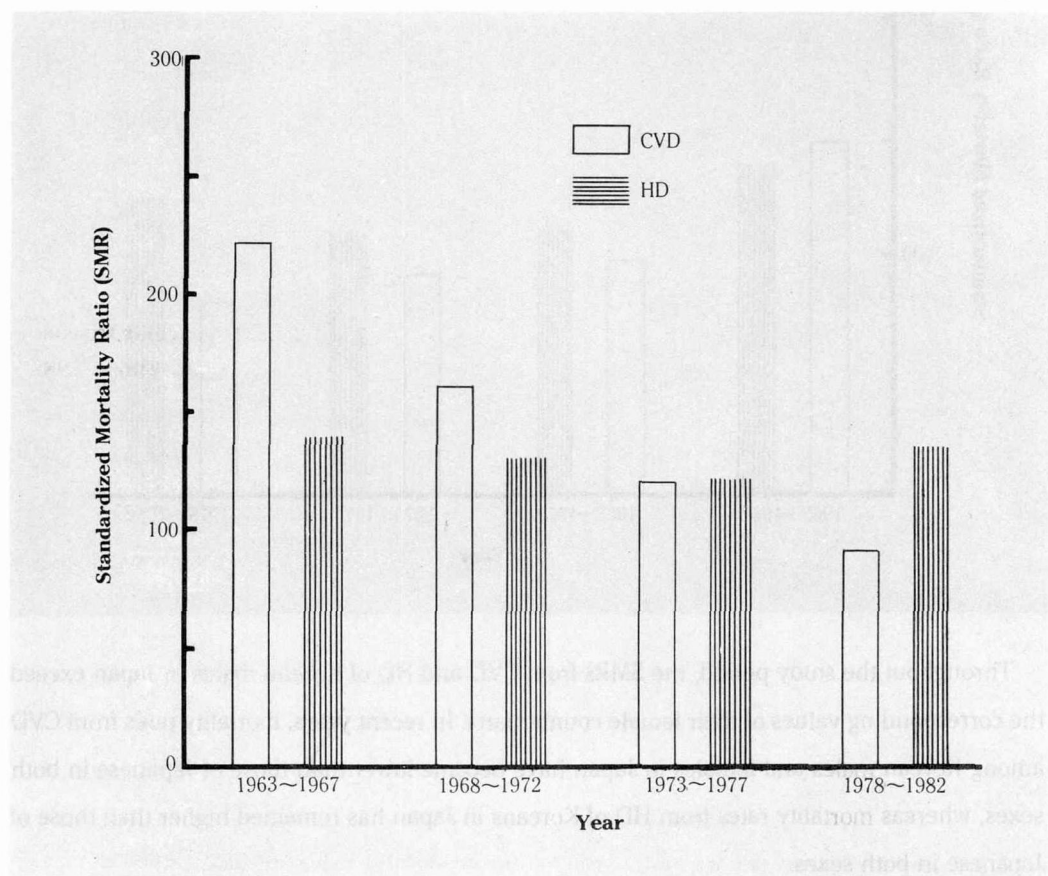
Cause of Death	Years	Males	Females
CVD	1963~1972	-27.2	-33.5
	1973~1982	-24.6	-13.9
	1963~1982	-59.1	-45.5
HD	1963~1972	-6.4	-18.4
	1973~1982	7.7	12.2
	1963~1982	-2.4	-10.0

4) H. Tanaka, *et al.*, "Secular trends in mortality fro cerebrovascular disease in Japan, 1960 to 1979," *Stroke*, 13: 574-581, 1982.

Figure 2 presents the secular trends in SMRs for CVD and HD for the study period. During the two decades, the SMRs for CVD of Korean males in Japan have dropped significantly, whereas the SMRs for HD have steadily decreased up to the period 1973~1977 after which there is slightly an increase in the period 1978~1982. The SMRs for CVD are higher than those for HD up to the period 1968~1972, while the SMRs for HD surpass greatly the SMRs for CVD in the period 1978~1982. Only the SMRs for CVD in both sexes fall below 100 in the period 1978~1982.

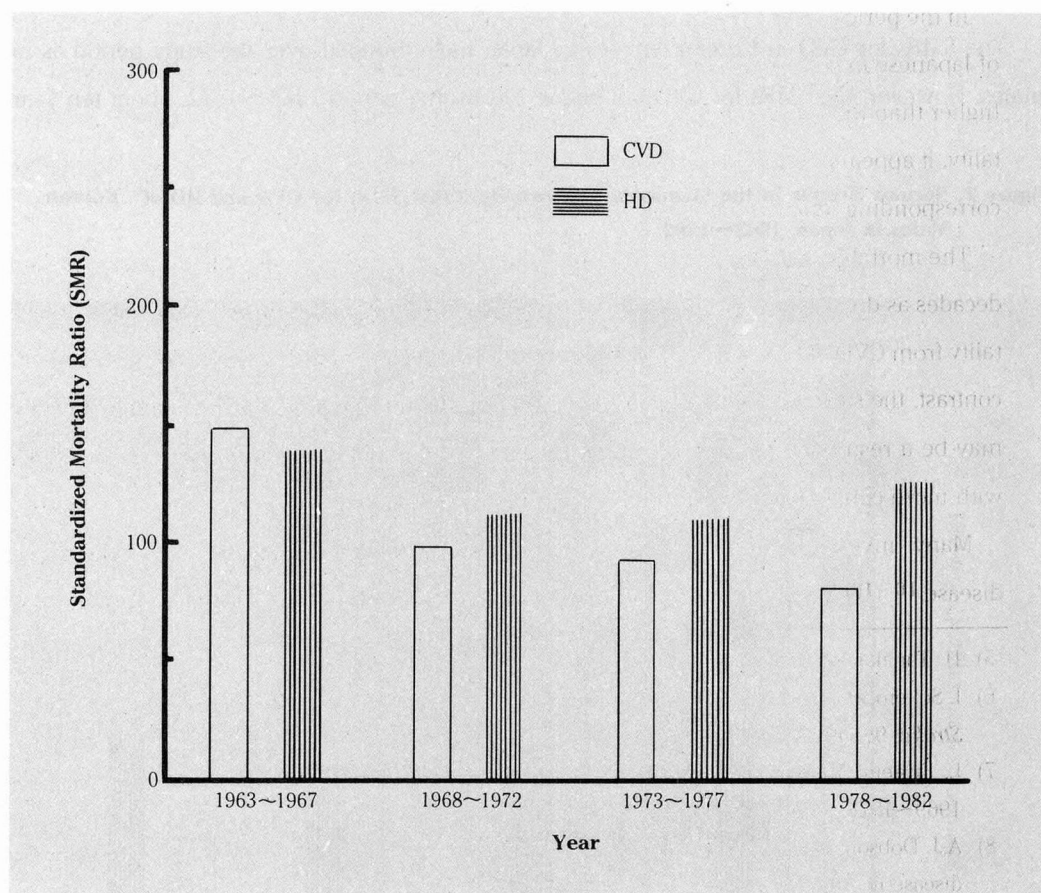
The SMRs for CVD in Korean females in Japan have dropped over the study period as in males. However, the SMRs for CVD fall below 100 for the period 1968~1972, about ten year

**Figure 2. Secular Trends in the Standardized Mortality Ratio (SMR) for CVD and HD of Korean Males in Japan, 1963~1982**



earlier than do in males. The SMRs for HD of Korean females in Japan have steadily decreased up to the period 1973~1977 after which there is an increase in the period 1978~1982. The SMRs for HD exceed those for CVD after the period 1968~1972. The differences of SMRs between CVD and HD is likely to be much larger in recent years.

**Figure 3. Secular Trends in the Standardized Mortality Ratio (SMR) for CVD and HD of Korean Females in Japan, 1963~1982**



Throughout the study period, the SMRs from CVD and HD of Korean males in Japan exceed the corresponding values of their female counterparts. In recent years, mortality rates from CVD among Korean males and females in Japan have become lower than those of Japanese in both sexes, whereas mortality rates from HD of Koreans in Japan has remained higher than those of Japanese in both sexes.

#### IV. DISCUSSION

This descriptive profile of mortality rates from CVD and HD of Koreans in Japan is neither the risk factor analysis nor study based on clinical research. However, this study examines the comparative trends and the differences in mortality rates from CVD and HD of Koreans in Japan based on analyses of both age-adjusted death rates and SMRs.

In the period 1978~1982, mortality rates from CVD of Koreans in Japan are lower than those of Japanese in both sexes, but mortality rates from HD of Koreans in Japan are remained slightly higher than those of Japanese in both sexes throughout this period. For both CVD and HD mortality, it appears from Figure 1 that the male age-standardized mortality rates are higher than the corresponding female rates throughout the study period 1963~1982.

The mortality rates from CVD of Koreans in Japan have significantly decreased in the last two decades as do in Japan as well as in developed countries.<sup>5)-9)</sup> In future it seems likely that mortality from CVD of Koreans in Japan will continue to decline in line with the rates of Japanese. In contrast, the steady increase in mortality rates from HD of Koreans in Japan seem in recent years may be a result of a number of causes. This rise in mortality rates from HD may be explained with more confidence as more information become available.

Many investigators have reviewed risk factors related to stroke and ischemic heart disease.<sup>10-12)</sup> There is evidence in the literature to suggest that risk factors for CVD were aging

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- 5) H. Tanaka, *op. cit.*, 1982.
  - 6) I. Soltero, *et al.*, Trends in mortality from cerebrovascular diseases in the United States, 1960 to 1975," *Stroke*, 9: 549-558, 1978.
  - 7) L. Epstein, M. Zaaroor "Mortality from ischemic heart disease and cerebrovascular disease in Israel 1969~1978," *Stroke*, 13: 570-573, 1982.
  - 8) A.J. Dobson, *et al.*, "Age-specific trends in mortality from ischemic heart disease and cerebrovascular disease in Australia," *Am. J. Epidemiology*, 113: 404-412, 1981.
  - 9) C.V. Florey, R.J.W. Melia, & S.C. Darby, "Changing mortality from ischaemic heart disease in Great Britain 1968~1976," *Brit. Med. J.*, i: 635-637, 1978.
  - 10) S. Haberman, R. Capildeo, & Rose F.C., "Diverging trends in cerebrovascular disease and ischaemic heart disease mortality," *Stroke*, 13: 582-589, 1982.
  - 11) M. Okada, *et al.*, "The relationship of serum uric acid to hypertensive and ischemic heart disease in Hisayama population, Japan," *J. Chron. Dis.*, 35: 173-178, 1982.
  - 12) H. Tanaka, & Y. Ueda, *et al.*, "Risk factors for cerebral hemorrhage and cerebral infarction in a Japanese rural community," *Stroke*, 13: 62-73, 1982.

and hypertension, however, it appears to be no simple explanation for the fall in CVD mortality rates of Koreans in Japan because data for age-specific mortality in Koreans in Japan are not available in the Japanese official statistics. In general, the official mortality statistics for Koreans in Japan are well presented, but less comprehensive than those of Japanese. Thus, there are potential sources of bias which impede the use of mortality statistics for epidemiological purposes. In order to elucidate some clues to the understanding of epidemiology of differential mortality, it is suggested that more detailed official statistics for Koreans in Japan should be available.

The risk factors for ischemic heart disease (IHD) were reported to include life style, and behavioral characteristics such as cigarette smoking diet, and stress.<sup>13)~15)</sup> Gibberd *et al*<sup>16)</sup> noted that the lower rates of IHD in Australia were shown among the higher socioeconomic status groups. Bunn suggested that there exists a relationship between socioeconomic stress associated with economic recession and IHD mortality.<sup>17)</sup> In view of risk factors discussed above, we may assume the hypothesis that the rise in HD mortality of Koreans in Japan may be linked with their lower socioeconomic status and higher stress in Japanese society.<sup>18)</sup> However, this hypothesis is not supported by results and these subjects certainly require further investigation. Such investigation would be greatly facilitated by classification of mortality data for ischemic heart disease and other forms of heart disease.

It is interesting to compare the mortality trends between Koreans in Japan and in Korea. In Korea, mortality rates from CVD ranked as the second leading cause of death in 1981.<sup>19)</sup> Comparison of mortality from CVD and HD among Koreans in their homeland (Korea) and in host

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13) A.R. Bunn, & Drane N.T., "Economic change as a factor in heart disease," *New Doctor*, 5: 53-55, 1977.

14) R.F. Gillum, *et al.*, "Coronary heart disease mortality trends in Minnesota health survey," *Am. J. Public Health*, 74: 360-362, 1984.

15) P.N. Lee, & Garfinkel L., "Mortality and type of cigarette smoked," *J. Epidemiol. Comm. Health*, 35: 61-71, 1981.

16) R.W. Gibberd, *et al.*, "Difference and comparative declines in ischemic heart disease mortality among subpopulation in Australia, 1969~1978," *Int. J. Epidemiology*, 13: 25-31, 1984.

17) A.R. Bunn, "Ischemic heart disease mortality and the business cycle in Australia," *Am. J. Public Health*, 69: 772-781, 1979.

18) Y.S. Kim, "A sociomedical study of an urban Korean population in Japan," *J. Kor. Public Health Assoc.*, 6: 61-77, 1980.

19) Korea Economic Planning Board, *Causes of Death Statistics 1981*, Seoul, National Bureau of Statistics, 1983.



country and host country population may bring possible interpretation of differences in these mortality rates, which is attributable to genetic factors or environmental factors. In the future comparative study of mortality rates from CVD and HD between two Korean populations should be made when accurate mortality data become available in Korea.

These findings of mortality from CVD and HD of Koreans in Japan enable some suggestions to be made about causal factors and the prediction of mortality trends, but the long-term pattern of these mortality are uncertain, because of secular trends studied. However, it is likely that mortality patterns for CVD and HD in Koreans in Japan have come to resemble those of Japanese in recent years. A possible explanation of this similar pattern is that little differences in dietary or other life style factors are seen between Koreans in Japan and Japanese.<sup>20)</sup>

It seems likely that environmental or life style factors played largely as risk factors for CVD and HD mortality of Koreans in Japan. Regarding these environmental effects, it has been discussed more elsewhere.<sup>21)~23)</sup> A complete explanation of the differences in mortality for CVD and HD between Koreans in Japan and Japanese can only be ascertained by further research.

In conclusion, the difficulty in interpreting the differential mortality of Koreans in Japan stress the need to conduct such comparative mortality studies of Koreans in their homeland and in host countries as similar studies of Japanese reported previously.<sup>24)</sup>

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## 在日韓國人の 腦血管疾患 및 心疾患에서의 死亡率

金潤信\*

在日韓國人の 主要 死因別 死亡中 第2位와 3位를 占하는 「腦血管疾患」 및 「心疾患」에서 지난 20年間(1963~1982年)의 死亡의 特徵을 1975年 日本人 男女의 各 死亡率을 標準으로 하여 얻은 標準化死亡率比(SMR)로 比較・檢討하였다.

그 結果, 最近에는 腦血管疾患 死亡率은 減少의 傾向이 있는데 反하여 心疾患 率은 약간 增加하는 傾向을 나타냈다. 특히, 1978~1982年에서 腦血管疾患의 SMR은 男女 모두 100以下로 低下한데 反하여 同期間에 心疾患의 SMR은 男女 모두 100을 上回하고 있다. 結論的으로, 在日韓國人の 腦血管疾患 및 心疾患에서의 死亡率 推移는 日本人의 그것과 비슷한 傾向을 나타내는 것으로 示唆되어, 在日韓國人の 死亡의 特徵을 具體的으로 把握하기 위하여는 그들의 生活樣式, 社會・文化的 環境 등의 諸要因과 관련시켜 分析할 必要가 있다.

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