Abstract: A Chronological Decrease in Type A Behavior Patterns among Japanese Male Workers in 1995–1999: Masayo Kojima, et al. Department of Health Promotion and Preventive Medicine, Nagoya City University Graduate School of Medical Sciences—We examined the chronological change in Type A behavior pattern (TABP) among Japanese male workers for 5 yr. A brief questionnaire to measure TABP was administered to 21,711 male workers who underwent health check-ups at least once during the period from 1995 to 1999 and were born in 1936–1965. The mean TABP scores decreased year by year linearly. Then the repeated measurement analysis of variance was performed with the data of 5,689 subjects who completed the questionnaire successively through the study period. Both year and the age effects were highly significant (p<0.001, respectively), whereas the time trends were comparable by baseline age. In conclusion, TABP among Japanese male workers decreased in all generations during the period from 1995 to 1999.

Key words: Type A, Psychosocial factor, Economy, Chronological change

"Type A man" was born of the clinical observations of two American Cardiologists in the mid-1950s. Friedman and Rosenman1, 2) found that their cardiac patients presented an "overt behavior pattern", characterized by intense ambition, competitive drive, constant preoccupation with occupational deadlines, and a sense of time urgency. It was named "Type A behavior pattern (TABP)"3, 4) and a series of studies were conducted to assess its association with coronary heart disease (CHD). After three large population studies showed a positive relationship between TABP and an increased risk of CHD5, 6), the Review Panel on Coronary-prone Behavior and Coronary Heart Disease concluded in 1978 that TABP was an independent risk factor for developing CHD7).

Nevertheless, a number of subsequent prospective epidemiological surveys failed to produce consistent results8). Moreover, psychological research, beginning in the mid-1960s, focused on emotions such as anger or hostility in isolation, thus fragmenting the concept of TABP into its component parts. Reviewing the articles concerning TABP from 1965 to 1998, Riska9) described what happened to the "Type A man" as follows: "having the status of a distinct set of medical risk factors in the late 1960s and most of the 1970s, the Type A man has all but disappeared as a social and diagnostic category in the vocabulary of medicine." Has the "Type A man" disappeared from the world? He might have just become inconspicuous because we have less interest in him than before. Or has he just mellowed with time?

Up until October 2001, just one article could be found on the Medline database reporting the change in the prevalence of TABP over time in the general population. Smith and Sterndorf10) administered the Jenkins Activity Survey Scale (JAS)11) to four hundred Danish men and women, once in 1988 and again in 1992. The scores were lower in 1992 than in 1988, and they concluded that TABP had declined in the Danish population, but these were not consecutive reports from the same individuals. We believe this is the first study that demonstrates a chronological decline in TABP in a working male population over a period of 5 yr.

Subjects and Methods

Subjects
The study protocol was approved by the Ethics
Committee of Nagoya City University, Graduate School of Medical Sciences. The samples of this study were male Japanese workers born in 1936–1965 who visited Gifu Prefectural Center for Health Check and Health Promotion ("the Center") during the period April 1995 to March 2000. The data on these subjects were taken from the medical records in the Center. Although individual written informed consent was not obtained from each subject, the investigators explained the aim of the study and confidentiality of the data to the Center administrators and got permission to access the data.

The Center is located in Gifu City, a middle-sized city in Central Japan with a population of 407,134 in 1995. According to the requirements of the law of Industrial Safety and Health, it is mandatory for workers to take an annual medical check-up. Therefore, the present sample can be regarded as a working male population of this Japanese semi-urban community.

Between April 1995 and March 2000, a total of 25,574 men underwent health examinations at least once. Those who were born before 1936 or after 1965, or those who reported having no stable job at any point during the study period, were excluded from the analysis. 21,711 subjects met all the criteria. Among the eligible subjects, 5,689 participants visited the center successively for 5 yr (mean age ± SD: 47 ± 6 yr, range from 29 to 60 yr at the baseline in 1995): that was 42.8% of the participants in 1995.

Methods

A self-report 12-item questionnaire developed by Maeda\textsuperscript{12, 13} was administered to the participants as one of the routine questionnaires from the Center; inquiring about past and present illness, demographic background, dietary habits, sports, sleep, and so on as part of the health evaluation. Maeda’s “Brief Questionnaire” was an original scale, designed to evaluate TABP tendencies in Japanese populations. Each item is rated on a three-point Likert scale ranging from “usually” (scored 2) to “hardly ever” (scored 0), with a double score given to the three items. The total score ranges from 0 to 30, and the author recommends a cut-point score of 17 or more for TABP screening. The correlation coefficient with JAS\textsuperscript{11} was reported as 0.72, and the concordance of the Type A judgment by Maeda’s scale and by JAS was 75\%\textsuperscript{12}. A recent cross-sectional study reported the discriminant validity of this scale between non-fatal myocardial infarction patients and healthy controls\textsuperscript{14}.

The participants were requested to complete the questionnaire in advance, and public health nurses checked all items during individual interviews carried out at the end of the health checkups. If there were missing items, the nurses asked the participants to complete them.

Analyses

Data were analyzed with SAS for Windows version 8.01 (SAS Institute, Cary, NC, USA). All statistical tests were two-sided. \( p \)-values \( \leq 0.05 \) were considered statistically significant. In order to evaluate the internal reliability of Maeda’s Brief Questionnaire, Cronbach’s alpha coefficient was calculated for each year’s data.

A repeated-measurement analysis of variance was then performed to examine the year effect and the generation difference on the chronological change in the TABP score. The subjects were divided into three groups by the baseline age (29 to 39 yr old, born in 1956–65; 40 to 49 yr old, born in 1946–55; 50 to 59 yr old, born in 1936–1945). The interaction between baseline age group and year, and the differences in the TABP scores by the baseline age group by year were examined.

Results

Table 1 shows the mean TABP scores ± standard deviation (SD), Chronbach’s alpha coefficients, and mean ages ± SD of the each year sample from 1995 to 1999. Alpha coefficients were at an optimal level (above 0.70), indicating good internal consistency of the scale. The mean scores of the total samples by year decreased linearly from 1995 to 1999.

Then, to test the time and generation effect on the score change, a repeated measurement analysis of variance was performed with the data for subjects who took the annual health examination successively through the study period. A total of 5,689 subjects, 42.8\% of the study participants in 1995 were included in the analysis. The chronological change in the mean TABP score by generation is shown

<table>
<thead>
<tr>
<th>Year</th>
<th>n</th>
<th>TABP Score</th>
<th>Age</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Chronbach’s α</td>
</tr>
<tr>
<td>1995</td>
<td>13,290</td>
<td>12.6</td>
<td>5.9</td>
</tr>
<tr>
<td>1996</td>
<td>13,090</td>
<td>12.5</td>
<td>5.9</td>
</tr>
<tr>
<td>1997</td>
<td>12,790</td>
<td>12.4</td>
<td>5.9</td>
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<tr>
<td>1998</td>
<td>12,361</td>
<td>12.2</td>
<td>5.8</td>
</tr>
<tr>
<td>1999</td>
<td>11,631</td>
<td>12.0</td>
<td>5.8</td>
</tr>
</tbody>
</table>
in Fig. 1. There was no significant interaction between year and generation (F_{8,1153}=.43, p=.90): the time trends were comparable by baseline age groups and TABP scores decreased linearly in all generations by year. The year effect was highly significant (F_{4,5765}=15.81, p<.001), and the difference by generation was also significant (F_{2,5768}=16.56, p<.001).

Discussion

We have demonstrated a significant decrease in TABP scores across all generations of the male working population of a Japanese semi-urban community. No significant interaction between age and year was confirmed by repeated measurement analysis of variance; all generations showed similar tendencies to decrease the TABP score linearly by year. Although we cannot specify the reason for the chronological decline in the TABP scores from available data, it is speculated that there has been some factor affecting the psycho-behavioral pattern of our subjects to reduce the TABP score regardless of generations.

We observed a significant age difference in TABP scores through the study period; those who were born in between 1936 and 1945 had significantly higher TABP scores than younger generations. This generation difference in TABP score seems reasonable because male workers aged 50–59 are more likely to have more responsible and demanding position in the work place than the younger generations.

During the study period from 1995 to 1999, the unemployment rate increased across the age spectrum16), and the rate of suicide kept increasing especially among the working male population in Japan17). Although we do not have financial information on the present subjects, social and economic environments are known to influence TABP15). The economic recession and other changes in modern society may help workers relieve their TABP tendency. On the other hand, recent social and economic decline might induce other maladies, such as depression. Actually, according to the Patient Survey Japan19), conducted by the Ministry of Health, Labor, and Welfare, the estimated number of patients suffering from affective disorders, including depression in Japan increased from 48 per 100,000 populations in 1996 to 51 in 1999. Depression is known to suppress the manifestation of type A characteristics7). Moreover, it is well established that depression is a risk factor for a variety of illness and for delayed recovery7,20). Recent epidemiological studies have reported a more consistent association of CHD with depression than with TABP8). Considering these trend, the scope of psychological support aimed at reducing CHD morbidity and improving the general health of the working population should be widened to focus on the detection and treatment of psychosocial factors such as depression, rather than confined to attempts to reduce perceived causes of TABP.

We should note several limitations to the interpretation of our results. First, all the participants received the results of health examinations including the TABP scores after health checkups, although further efforts to reduce the TABP scores were not provided by the public health specialists at the Center. Some effects of memory and response sets due to the repeated administration of the same questionnaire on the results cannot be excluded, but the mean TABP scores of the total subjects including new or single visitors to the Center also showed the same tendency (shown in Table 1). Therefore the influence of repeated administrations of the same questionnaire seems not to be strong. Next, the follow-up rate of our study was relatively low (42.8%). Those who take annual health checks for five successive years are supposed to be health conscious and financially stable. We should consider some selection bias; the subjects might be more likely to regulate their own lifestyle and behavior than subjects who were excluded from the analysis.

In conclusion, this study demonstrates a decline in the incidence of TABP among workers in Japan, complementing other recent research showing a reduced association of TABP with CHD. We need further investigation to confirm its association with social and economic change to achieve better health management and promotion in working populations.

References

1) M Friedman and RH Rosenman: Association of specific overt behavior pattern with blood and cardiovascular findings. JAMA 169, 1286–1295 (1959)
2) M Friedman and RH Rosenman: Overt behavior pattern


