

SOCIAL STRESS AND CORONARY HEART DISEASE IN JAPAN

A Hypothesis

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Japan has one of the lowest rates of coronary heart disease in the world; the United States, one of the highest. In 1960–1961, the white male American possessed the highest known age-adjusted death rate in the world for arteriosclerotic and degenerative heart disease—326.2 per 100,000, as compared to 67.8 for the Japanese male.¹ The standardized male mortality ratio for coronary heart disease, according to Haenszel and Kurihara,² was 481 white Americans for every 100 Japanese. In a 1962 symposium the ratio of the death rate from coronary heart disease to the total death rate was reported as 33.2 for U. S. whites and 8.7 for Japanese.³ For Japanese men age 50–54, the death rate in 1953–1954 was less than a tenth of that for white American men.⁴ Coronary heart disease remains the most serious health problem for the middle-aged U. S. male.

This remarkable difference between Japan and the United States in their respective tendency to coronary heart disease cannot be regarded as merely accidental, nor is it possible to foist the blame entirely on hereditary or ethnic factors. Any racial tendency toward disease of the heart or vessels is discounted by comparison of rates for Japanese residing in Japan, in Hawaii, and in the continental United States. Gordon, in his provocative article, noted that the trend for the Japanese

in Hawaii, especially the men, was intermediate with respect to cardiovascular mortality between the Japanese of Japan and of the United States.⁵ The Japanese who migrate to mainland United States exhibit American coronary rates.

EXPLANATIONS IN ETIOLOGY

In the search for possible factors involved in the etiology of coronary heart disease, the phenomenon of disease has been suggested as the possible product of the way of life of a people, where cultural and social components may well have an important bearing on health and illness. During a lifetime differences in the mode of life and social environment may exert an accumulating influence. In current studies it seems reasonable to state that the two major factors of (1) high-fat diet and (2) emotional stress, both concerning living habits, seem to be increasingly implicated in the development of coronary heart disease.⁶⁻⁹ ●

Diet

Laboratory research and epidemiologic studies support the postulate that the fat content of the daily diet, especially highly saturated animal fats, has an important effect on the frequency of coronary heart disease in a population. Keys contends that the incidence of coronary heart disease is related to the high-fat diet by virtue of its influence on the level of serum cholesterol.¹⁰ Blood levels of cholesterol and of triglycerides are elevated in, and are directly related to, the development of atherosclerosis, a basic disorder in coronary disease. In his study of the Japanese in Japan, Hawaii and Los Angeles, Keys further denoted the relation of low serum cholesterol and dietary fat to the uncommon occurrence of coronary heart disease in Japan.^{11,12} Gore¹³⁻¹⁵ and Snapper^{16,17} also emphasized the importance of diet in atherosclerosis. However, these interpretations have not been completely clarified nor universally

accepted. Stout and his associates report that the Italian-American community of Roseto, Pennsylvania, has a strikingly low death rate from myocardial infarction although total fat consumption is at least equal to that of the average United States citizen.¹⁸ Among the Navajo Indians, despite fat intake and serum cholesterol levels comparable to those of urban United States inhabitants, ischemic heart disease remains infrequent.¹⁹ Dietary studies by Paul,²⁰ Malhotra,²¹ Thomas and Ross²² and others reveal no significant association of intake of dietary fat or of serum cholesterol level with the probability of developing coronary heart disease. The diet hypothesis, nevertheless, is strongly supported by the fact that the diet of Japan derives less than ten per cent of its calories from fat as compared with 40 per cent in the American diet^{23, 24} and by the findings relative to the differences between Japanese living on different diets.²⁵ Furthermore, in recent years, as the intake of dietary fat in Japan has steadily increased, a simultaneous increase in coronary heart disease has been reported.^{26, 27}

Social Stress

The factor of social stress is also widely postulated as occupying a foremost position in the development of coronary heart disease. Regardless of how stress is operationally defined, clinical, physiologic and psychologic studies have shown it to be related to factors implicated in the etiology of coronary heart disease. As is the prodigiously high-fat diet, emotional stress is associated with the elevation of serum cholesterol. This has been demonstrated in studies of cholesterol levels on medical students during examinations,²⁸⁻³⁰ accountants during tax preparation deadlines³¹ and patients undergoing surgery.³² Studies by Russek and Zohman,³³ Ostfeld and his colleagues,³⁴ Miller³⁵ and other investigators show that coronary patients tended to be under greater chronic stress, particularly occupational pressures, than a similar group of persons without heart disease. Friedman and Rosenman have been extensively studying the

profile and behavior pattern of patients who are "coronary prone."³⁶ Coronary heart conditions may have their onset in the setting of stressful life situations that are associated with a rise in cholesterol and other lipids, and be related to disturbances of fat metabolism. Chronic and cumulative stress without relief may reach a point of sudden cardiac illness after years of apparent toleration.

Numerous other studies have strongly indicated that the chronic stresses and strains of modern Western life may be major contributing causes to coronary heart disease. The processes of urban-industrial change are seen to create a universal style of life in modern cities where traditional behavior patterns were disrupted by an increased impersonality in interpersonal relations. Tyroler and Cassel explored the effect of urbanization and found that mortality from coronary heart disease for rural male residents of North Carolina increased with the increasing urbanization of their county of residence.³⁷ Wardwell and his colleagues in a study of white males in Connecticut, found that increasing frequency of coronary heart disease was associated with "emancipation from traditional orientation."³⁸ Syme and his associates studied "cultural mobility" in relation to coronary heart disease in North Dakota³⁹ and in California,⁴⁰ and found a higher rate of coronary heart disease for men of urban American background than for men of rural or urban European background. In 1966, at the National Workshop Conference on Socioenvironmental Stress and Cardiovascular Disease, a consistent finding in the comprehensive review of published works in this field indicated that higher rates of heart disease occurred in the more modern urban-industrial settings than in rural nonindustrial areas.⁴¹ However, the relations of modernization and urbanization to coronary heart disease cannot be accepted as sufficient explanation. The contemporary Japanese, like the Americans, are highly urbanized and industrialized. Yet, differences in coronary heart disease are major and persistent.

HYPOTHESIS

Although the diet factor is strongly supported by studies of the Japanese on a low-fat diet, the stress interpretation appears to be contradicted in the case of Japan, the only nation outside of the West to achieve industrialization and urbanization yet possess low coronary rates. Deeper probes into the social integration of the individual within a particular social system may provide insight into sociosomatic processes that may be related to human stress and illness. Individual measures of the level of cholesterol, blood pressure or triglycerides do not necessarily assist in clarifying group differences in diseases. The differences of coronary heart disease rates between Japan and the United States might be comprehended more clearly in social terms, using the group principle.

Some behavioral scientists view the sociocultural system as a stress-inducing environmental factor, but it is well to remember that stress-reducing components are also present simultaneously. In well-integrated societies, attempts are made to contain anxieties and tensions within appropriate limits. In Arsenian's terms, the *easy* cultures prescribe techniques to engender stress-reduction for members, whereas, in *tough* cultures, tension dissipations are chronically blocked.⁴² All societies have not equally evolved stress-resolving techniques to reduce in the individual those excessive strains that may aggravate physiologic reactions.⁴³ Thus, sociocultural factors may either facilitate or inhibit the extent of disease in a given population.

The basic hypothesis to be explored here is that stress is one of the complex and interrelated factors involved in the etiology of coronary heart disease. The hypothesis further assumes a duality in the relations of the sociocultural system to stress and hence to coronary heart disease. Aspects of the sociocultural system may induce stress, but institutions and orientations within the system may reduce or contain stress. Those factors in the society that are productive or ameliorative of stress need not be independent of other factors. Rather, they are interre-

lated as predisposing or minimizing factors with other aspects of environment, of diet, of health habits and of ways of living.

This broad hypothesis is not susceptible to empirical exploration without specifications. A working hypothesis specific to disease and culture may be stated as follows: The etiology of coronary heart disease is multiple and complex, but in urban-industrial Japan, the in-group work community of the individual, with its institutional stress-reducing strategies, plays an important role in decreasing the frequency of the disease. If adverse and stressful life experiences may be translated through physiologic mechanisms into bodily diseases, then the converse seems reasonable. Deleterious circumstances of life need not be expressed in malfunctioning of the physiologic or psychologic systems if a meaningful social group is available through which the individual can derive emotional support and understanding.

JAPANESE SOCIETY AND THE INDIVIDUAL

Although the history of Japan extends back several millennia, contemporary Japan traces primarily from the tradition of the Tokugawa oligarchy and hierarchy, beginning early in the seventeenth century. In the traditional society, the *giri-ninjo* (moral duty versus human feelings) psychology was intermixed with Confucianism and Buddhism. During the two and a half centuries of the Tokugawa regime, the *ie* (house) and the family orientations assumed great social importance.

Studies by Japanese and Western scholars concur that the basic values and the sociocultural structure of industrialized Japan do not seem the same as those of the West. A persistent social trait, as seen by these studies, is the tendency toward group emphasis in Japan. In the West the increasing importance of individualism, focused on the relative autonomy of the person, has been emphasized as an outstanding correlative to modern industrial-urban growth. In spite of rapid social change in Japan, observers agree that Japan has not moved

from group values toward individualism, but rather retains strong emphasis on collectivity orientations within the in-group.⁴⁴ Modern Japanese tend to judge one another rather less as individuals than as representatives of groups. As Japan moves from an agrarian community to an urban-industrial society, this writer believes collectivity orientations have been strongly maintained while shifting from the traditionally hierarchical basis to increasingly egalitarian principles.⁴⁵ Caudill and Scarr, in an empirical study of the Japanese value system, state the dominant value orientation as that of collaterality that stresses group welfare and group consensus rather than lineality or individualism as primary goals.⁴⁶ A recent publication indicates that the Japanese sociologists have begun to critically view their urban society in terms of the group idea of *dozoku*, the locality blood and/or fictitious kinship ties.⁴⁷ Group orientations remain a dominant part of the social environment of Japan.

Western observers also note a greater sense of dependency in the modal Japanese personality. Marked dependence, or interdependence, may be an outcome of the group emphasis in Japan. The Japanese socialization of dependency has been indicated by many writers. In comparison with the American sample in Vogels' study,⁴⁸ the Japanese children required a great deal more emotional support from their parents. The Japanese child does develop increasing independence as he matures, but his desires for dependence are much more socially approved. Goodman, in a study of occupational choices of Japanese and American children, found that the Japanese children were markedly less self-centered and egocentric than were the American children.⁴⁹ Caudill has observed the pattern of dependent relations between psychiatric patients and hospital staff in Japan.^{50, 51} Doi has discussed the term *amaeru* (wish to be loved, or dependency needs) as a key idea in comprehending Japanese personality structure,^{52, 53} although it seems dangerous to seize upon a single notion as the magic key to explain the tone of a culture. Currently Japan shows a trend

toward greater independency, and as Whyte⁵⁴ and Riesman⁵⁵ contend, Americans are becoming more dependent and "other-directed." Nevertheless, expressed in extremes for the sake of contrast, it can be said that the Japanese prefers a situation in which he can be fairly dependent, whereas the American prefers conditions that permit a measure of independence.

Work Group Characteristics

In urban-industrial Japan, as in the West, the shift has been from residential collectivity to work collectivity. The immediate work group is of primary importance. The integration of the average Japanese male into the social and economic order, however, is not through his occupation *per se*, but through his firm. The individual's sense of identity originates with his employment by a particular business company or government ministry. If asked about his work, the Japanese male will most likely reply by stating the name of his firm, not by giving his occupation. An employee, once hired, generally is never dismissed unless strong evidence is found of gross negligence, disobedience or commission of a crime, all of which are extremely rare. Seniority, as much as competence, is important for advancement of wage or rank within the business enterprise. Once recruited even the inefficient employee is usually retained until his retirement age. A Japanese employee almost never leaves his company to work for another firm. In contrast, the American is likely to move from one job to another fairly often. Once hired, the Japanese worker tends to have greater employment security until his retirement than does his American counterpart.

Paternalism is exhibited by Japanese enterprise by the various welfare facilities and benefits offered exclusively to its own employees. An employee and his family often may live in company housing free or at a low rental. All fairly large business companies offer medical treatment and care at the company hospital at minimal cost. At the company cooperative, household needs and general goods can be bought at cheaper prices

than at the ordinary stores. The employee can eat inexpensively at the company dining room and participate in various forms of recreation subsidized by his firm. For example, the Rohto Pharmaceutical Company of Osaka, a leading producer of eye-lotion in Japan, with over 800 employees, boasts "a spacious dining room with elaborately designed tables, a workers' assembly hall of semi-domed structure being used for movies, concerts and lecture meetings, an athletic hall, a two-storied boarding house for bachelor workers, a tremendous swimming pool and a boating pond."⁵⁶ Thus, it is often said that the Japanese firm is "not a profit-making organization but a social welfare organization."⁵⁷

Group structure. An important characteristic of the group structure in Japan is the tremendous feeling of in-group solidarity. The focus is on the in-group as opposed to the out-group. In contrast, the dichotomy of the individual pitted against the group is the difference frequently described in the sociologic writing in the United States. In Japan, the crucial distinction is between the closed community in-group of one's own collectivity and other out-group collectivities. Such a distinction is almost unknown among Americans under ordinary circumstances, although Stouffer documents such social solidarity in groups of fighting American soldiers under military stress in combat situations.⁵⁸

Another Japanese characteristic appears to be the lack of any real existence or importance of the individual apart from his group. Only through the intimate group membership that absorbs his total personality does the individual find meaning to his existence. Doi, a Japanese psychiatrist, notes that in therapy many of his patients have no clear conception of self apart from the group.^{59, 60} When the individual has little importance outside his group, any "disharmony," as often described in American studies,⁶¹ between the individual and the group tends to dissolve. The individual and group interests are united, which sharpens the demarcation between in- and out-groups. Motivations for achievement and mobility do exist,

but within the same membership group rather than as is so often true in the United States, a desire to gain admission and acceptance into a new group.

Group membership is continuous over the years. Both the individual and the firm look upon his employment as a lifetime commitment. The commercial firm recruits the fresh graduate from school, trains him and keeps him until his retirement age. As companies usually hire new employees only once a year during the college and high school graduation season, the individual joins at the same time as large number of other men. In the orientation programs and daily tasks he is in constant contact with his peers. Those workers who entered before him become the *senpai* (senior or superior), and anyone employed after him is a *kohai* (junior), both terms being frequently used in company conversations. Employees expect to continue together for their entire careers.

The work collectivity offers satisfying emotional support and social attachment in a group relation of human feelings and intimacy. In psychiatric terms, the affectively-involved contacts of total personalities exist with a heightened sense of interactions. Minc and his associates observe that the coronary patient in urban Australia tends to maintain an intellectual control of his behavior, but that his planned activities lack emotional backing.⁶² Among his fellow employees, the Japanese individual can relax, argue, criticize and be obstinate without endangering relations. Caudill suggests that communication and expression of tenderness and affection are handled well and adaptively in Japan, whereas such expressions of tenderness, especially between American men, are very difficult.^{63, 64} The Japanese can forego the privacy that screens his inner self and merge himself within the identity of his group.

Another important characteristic is that each person has his own intrinsic worth because of the contribution he makes to the group. No member of the group is considered an independent individual in the Western pattern, but his individual importance to the group is by no means minimized. At the

proper place and at the proper time, each can express his personality and has a role to play. Furthermore, under certain circumstances it is possible, because of his group attachment, for the expression of strong individualism. When criticized or attacked by an outsider, the individual, right or wrong, will have the group's support and backing.

Closely related to the above characteristic, a greater sense of mutual tolerance and respect is also developed. Although a group may contain persons antagonistic to each other, the number of persons in the group is enough that an individual is able to select close comrades. Simultaneously, understanding and compassion for each of his fellow workers in the group are fostered through the years. In his study of the Japanese salary man, Vogel keenly observes: "Because most groups are relatively stable, a person usually is not judged on the basis of a single performance. The intimate association of group members over years makes it possible for them to know each other's abilities and weak points intimately."⁶⁵ Each individual is able to establish an area of competence in an activity where his talent in some manner is better than that of his co-workers.

Within the strong collectivity orientation, no distinction is made between work and leisure and between "public" and "private" life. Unlike the American view, which holds that leisure is an individual and private affair apart from work, no clear division exists for many Japanese between work and play that is performed together with his co-workers. The Japanese is not an enthusiastic joiner of formal leisure-time clubs separated from his group, even for specific recreational purposes. In both labor and leisure, the Japanese individual is involved primarily with his fellow workers.

The work collectivity is almost always composed of a group of male associates. Closest friendships are formed between people of the same sex who are in constant contact. Vogel writes that in Japan the husband's friends are his fellow workers; the wife's friends are her female neighbors. Vogel further notes that "these relationships are remarkably intimate."⁶⁶ A

husband centers his social life at his place of employment; the wife on her immediate neighbors and relatives. In their separate social communities, the husband seldom meets his wife's friends, and the wife does not associate with her husband's friends. The Japanese salary man clearly differentiates his activities between his work and his family life. As stated above, work and leisure are performed together with his co-workers, but a distinction is made between the establishment versus the family. In this sense, the American man is probably much more a family man than the Japanese husband who spends much less time with his wife. The Japanese women, notably the wives, act to preserve the male's position of superiority with the traditional prerogatives. For the Western man, Simmons and Wolff have speculated that "the 'emancipation of woman' that has characterized western nations during the past half-century or more has placed a differential stress in man-woman relationships with the 'pace' of modern life adversely affecting the security of men more than that of women. . . . This tide of change can be viewed as undermining the established statuses and emotional supports for man."⁶⁷

In Japan, also, as more women find jobs and work outside the home, the husbands of Japan may find their position being altered. In 1955, 6.3 per cent of all married women worked, and, by 1960, that figure rose to 9.3 per cent.⁶⁸ The general situation persists, however, whereby the Japanese male is permitted much emotional support from his women. Within a social matrix of male dominance and superiority, much of his leisure-time activities are spent with his co-workers, which may involve female participation in lesser roles as waitresses or hostesses, but almost always exclude the wives.

STRESS-REDUCING ACTIVITIES AND FACILITIES

Sociocultural systems inculcate stress as part of the normal social processes. Japanese society is no exception. Continuous and accumulating stress of various types and varying degrees is

part of the daily living pattern in the modern urban-industrial milieu. In the impersonal environment of the modern world, it is not unusual for the individual of the West to spend the major portion of his working hours among persons in whom he cannot usually confide or from whom he can expect little guidance. The Japanese individual, however, is sheltered within his personal in-group community with built-in social techniques and maneuvers for diminishing tension.

After-Work Socializing

By relaxing "on the way home" with his fellow office mates, the Japanese salary man can maintain camaraderie with his closest associates. Perhaps a case can be made that such daily or weekly socializing may be necessary to seek relief from the often excessive tensions and obligations of interpersonal relations in Japan. After-hours socializing may not seem a part of a job description, but as Plath points out, "it is so much a part of what is routinely expected of him that if he persistently fails to join in the 'fun' he risks serious sanctions."⁶⁹ Vogel, in his description of the "father and his company gang," writes:⁷⁰

Various polls have shown that it takes the husband an average of two to three hours to get home. While commuting may require a long time, the transportation alone could not possibly take that long. It is rather that this is the time for recreation. After work, the men stop off someplace to sit and chat, have a drink and perhaps a bite to eat. Most company gangs have their own favorite hangouts: bars, coffee houses, small food-specialty shops, and the like. Here, by spending only a few cents, they can have long leisurely conversations. It is here that they talk and laugh freely about sports, national and world events or the daily happenings in the company, complain about bosses and wives, and receive the consolation of their friends and of the sympathetic girls behind the counter.

Tea shops. Although called *kissaten* (tea shop), the obviously correct nomenclature would be coffee shop. From a tradition of drinking ceremonial tea in the *chasitsu* (tea room) to regain composure and serenity, the modern Japanese have

evolved the coffee shop, uniquely their own *ikoi no ba* (a relaxing place). A coffee shop may be found in almost every building and business corner in every city and town in Japan. Throughout Japan, the estimate for the number of coffee houses approaches 100,000. In 1966, the telephone directory in Tokyo listed 8,600 such shops, and in Osaka, 4,600.⁷¹ The usual coffee shop has "mood," a romantic atmosphere created by luxurious furnishings with soft lighting effects, air conditioning and continuous music. The novelty coffee shops fit every possible taste, interest or hobby. Various coffee houses cater to enthusiasts of rock and roll, hillbilly tunes, French chanson, Japanese traditional songs or the music of Brahms or Beethoven. In Tokyo coffee shops, one can sip coffee and watch models parade past in the latest fashion in wedding gowns, bathing suits or in girdles, bras and panties. Whether for after-work socializing or a break from office routines, small bands of salary men visit their favorite coffee shop for diversion and rest. The coffee shops also serve as ideal rendezvous for young couples, for shopping wives and even as an *omiai* meeting place for the prospective bride and groom for an arranged marriage. The coffee shop is a somewhat distinctively Japanese facility for relaxation away from the tensions of modern urban life and is unlike anything in the United States. A similar phenomenon, to be sure, can be observed in many other societies, as in the Middle East, in Spain and Portugal and throughout Latin America, but in Japan it appears to be a more firmly institutionalized facility that has been incorporated into the life style of an industrialized society.

Drinking places. A further extension of relaxation and deeper involvement in group cohesion occurs in drinking *sake* (hot rice wine) or beer at drinking places, usually more elaborate than the *kissaten*. Such places are limitless throughout Japan. Drinking together remains for the Japanese an indispensable means of creating mutual intimacy accompanied by the greater release of emotions from everyday formalities. A man who will not partake of alcoholic drink with the group is one not to be

trusted. While drinking, men can argue, shout or even cry if they feel so inclined. The important ingredient at the drinking places is the feminine companionship that is offered, often referred to as *yoru no cho* (butterfly of the night). All drinking places with hired hostesses cater almost exclusively to the male clientele. The girls, though not taken seriously, are skillful in making a man feel important and superior.

Mizushobai (water-trades) range from the lowly *shochū* (potato-spirit) night stalls in the backstreets where one can buy a drink for a few cents to the plush night clubs where a single glass of beer may cost many dollars. The expensive geisha houses or the Western-type night clubs are visited only when entertaining important business clients and always on the firm's expense account. The plushness of the cabaret and the beauty of the hostesses will diminish with receding prices, but the enjoyment and relaxation remain. Japanese visitors to the bars and cabarets do not just look at the entertainment, they participate and become part of the entertainment. Stopping off at a favorite drinking place on his way home with his office group, especially on payday or on a Saturday night, is an important aspect of life for the average Japanese husband. It can lead to an expedition of *hashigozake* (ladder-drinking) which takes the group from bar to bar far into the night.

The American male who is admired is the man "who can hold his liquor." This is not so in Japan where drinking is a permitted normal indulgence with no reprimand or guilt associated with it. Westerners are impressed at how quickly the Japanese can get drunk, and how much emotional release he gets from a small amount of *sake*. "Oh, he was drunk" is an acceptable excuse for some unusual behavior, as is "Why, he was ill" on the American scene. Such leniency has given Japan the reputation of a "drunkard's paradise." However, in spite of the high consumption of alcohol in Japan, little alcoholism is known, compared to that in the United States.

Bathing. Often for after-work socializing a group of men may head for the nearest public hot-bath house before venturing off

to their favorite bar. The Japanese find bathing a satisfying experience for relaxation and gregariousness as well as for cleanliness. Historically this may be related to the abundance of natural hot-spring spas in Japan. Children from infancy bathe together with one of the parents either at the public bath or the family bath at home. In the status-conscious society, all men become equal, at least momentarily, while bathing together in the "public bath-house democracy."⁷² The bathrooms in a public facility are segregated for males and females, and each room is usually big enough to contain approximately 50 persons; the bath itself is large enough for 15 or 20. A *sentō* (public bath house) is located in every ward in a city, and is the community center of local gossip and socializing. A recent innovation in the cities combines the bath house and the spa resort into the "health center," which also contains restaurants and recreation such as bowling and stage shows. *Toruko-buro* (Turkish baths) attended by young female masseuses are also popular. Ruth Benedict succinctly summarizes the pleasure of the hot bath by the Japanese as: "They value the daily bath for cleanliness' sake as Americans do, but they add to this value a fine art of passive indulgence which is hard to duplicate in the bathing habits of the rest of the world."⁷³

Seasonal Group Activities

The distinct climatic changes in Japan accentuate the idea of group leisure as being seasonal. The institutionalized activities, in turn, make the individual aware of the delights of the four seasons.

Spring. Hanami or the viewing of the cherry blossoms in springtime after the winter months is an important seasonal event. The cherry blossoms, which suddenly burst into bloom and then fall within a short period, have often been linked to the Japanese "spirit," and have delighted the eyes and fancies of the Japanese since time immemorial. Throughout Japan during the fine April days, parks and other sites, no matter how small, that contain blossoms become packed with groups

of office workers and families with children. The cherry blossoms provide the excuse for sitting and relaxing on straw mats beneath the blooming trees. Large quantities of food and drink—*sake* and beer for men and juices for children and women—are spread out. When the men become well-primed with drinks, they sing and dance, clap hands with much gaiety, and also often argue and fistfight, usually with men from other groups.

Summer. A day at the beach is a favorite summer outing for the salary man and his work group. Often their wives and children are included in this activity. Most large companies have their own “House by the Sea” for use by their employees. The company group can also take advantage of the firm’s discount on bus fares and at special hotels. Other summer group activities are fishing trips, mountain climbing and camping.

Fall. With the briskness of autumn, the two- or three-day excursion trip to a hot-spring resort by the work collectivity is extremely popular in current Japan. The *onsen* (spa) combines the two most relaxing pleasures to the Japanese—bathing and drinking together. On the volcanic isle of Japan, the 1,335 spas are utilized by over 60 million persons yearly.⁷⁴ The weekend or three-day vacation tour of an office group of male co-workers, sometimes including female workers but not their spouses, going off together is commonplace in Japan, but is almost unknown in the United States. The group often char- ters a bus or occupies most of a train car, and the fun begins as soon as they get aboard. The plush red carpet at the resort’s entrance lobby, the attentive maids, the huge 80-mat banquet room, the overflowing hot water in elaborately tiled or rock- arranged Roman-type baths looking out on a scene of natural beauty—all engender a sense of elegance and extravagance not experienced at home or work. A stronger sense of group unity seems to emerge with everyone wearing identical cotton *yukata* of uniform design and similar *tanzen* (thickly-wadded kimono for cold weather) supplied by the inn after the bath. The camaraderie reaches its height in the evening feasting, drinking and singing together. As one Japanese journalist puts

it, "the *onsen* serves as an air pocket in the stressful atmosphere of a modern urban society."⁷⁵

The *undo-kai* (sports field day) is another popular autumn event, though sometimes held in the spring. It is sponsored by schools for students and their parents, and by companies for their employees. It features various sports events and usually the members' families are invited. Folk dancing and a masquerade contest may be included as part of the program. Other group activities during the fall months may be an excursion trip to a national shrine or a mushroom hunting expedition.

Winter. Group recreation during the winter season may include skiing, ice skating and other winter sports, with Christmas Eve fast becoming an occasion for carousing in bars and cabarets. However, the most important event by far, and for the entire year, is the *bonen-kai* or "party to forget the outgoing year." This event held in December is a definite must on the list of annual activities of all work groups. It is important to the Japanese to commence the new year with a fresh start, and every effort is made at the year-end to foster a genuine feeling of rapport, high morale and close comradeship among the members of the group. Committee members work hard to arrange the program and entertainment. The cost of year-end party is usually covered by funds the employees set aside from their monthly salaries, plus donations contributed by the company president, other executives and supervisors. Large companies and government offices hold the party on a departmental basis with each department having its own binge.

The *bonen-kai* begins with formal speeches and gradually works up to an uninhibited release of emotions and goodwill. Individuals will exchange *sake* cups and drink together as a symbol of their family-like unity. For entertainment, each person is expected to perform, and such an occasion permits the full expression of the individual's personality. Some sing, dance or tell amusing stories; others perform parlor tricks, stunts or even juggling. Vogel observes:⁷⁶

In contrast to the American social hour or cocktail party, where one talks personally to one or two at a time, Japanese parties or trips are oriented to the whole group. . . . Although as many as 20 or 30 people may sit together listening to stories and joking, speakers are often more intimate than they are in private conversation. On such occasions men openly air their troubles and sometimes make personal confessions or tell jokes designed to correct personal problems within the group. At other times, someone in the group with special talent will tell funny stories or perform by singing or playing a musical instrument.

When inhibitions are removed through intoxication, the men may sing risqué songs and dance with suggestive motions. As a Japanese writer states: "It is an unrestrained reverie where all decorum is thrown aside, and men and women enjoy themselves to their heart's content and consign to oblivion—at least for the while—the dry, nerve-racking routines of their everyday existence." The *bonen-kai* party is not truly successful if it does not produce *don-chan sawagi* (boisterous merrymaking). In the midst of all this, some serious heart-to-heart talk may be going on between various individuals in a corner of the room, in the hallway or in the men's room. At the proper moment the maids begin to serve rice, which indicates that the drinking is to stop and that the party is over.

This brief description of the various activities and facilities for after-work socializing and seasonal recreation in the context of strong group interaction illustrates the provision of institutional means for dissipating tensions and stresses for the Japanese individual. Studies of Japanese society and personality have not sufficiently emphasized the psychobiologic importance of social mechanisms for stress-reducing factors in a stress-inducing environment. Japan, known as a highly structured society, is also counterbalanced by the institutionalization of strategies for stress meiosis, which permits, though it never fully guarantees, periodic remittance from mounting life stress.

RESEARCH STRATEGIES

It has been posited that the stress-reducing mechanisms in Japan tend to diminish the negative consequences of stress and presumably lead to lower coronary disease incidence. The analytic focus is on the dynamic interrelation between the individual and the group in which he seeks to satisfy his social and psychologic needs. The important task is to begin meaningful study of the role of social factors involved in etiology. This will not be easy, however, in view of the enormity and complexity of the problem.

Measurement of Social Interaction

The need remains for penetrating and rigorous statistical indicators of the degree of group interaction and relations. This could be constructed in attitude-type scale to represent the respondent's definition or perception of his own interpersonal situation. A retrospective study designed to investigate the extent and significance of social interaction and integration could compare individuals with cardiac illness with a carefully matched control group composed of persons free of symptoms of coronary disease. A comparative study could also contrast the characteristics of social interactions of those with high serum cholesterol level to those with low cholesterol level. On a long-term basis, a cohort study could involve the prior selection of individuals with meaningful group ties and those without such attachments and view their cholesterol levels and prospective coronary heart disease rates.

A helpful tool in measurement may be what Jules Henry terms the "personal community," defined as a group of people on whom one can rely for support, acceptance and approval in intimate and satisfying ways.⁷⁸ The "personal community," be it the nuclear family, the work group, a religious order or the military unit, is the core of a man's security system. Henry presents the precise specifications of the statistical properties of the "personal community" in terms of *number*, which is

determined by counting those who most frequently contribute to an individual's welfare and approve his actions; *constancy*, which is measured by the time spent by its member in direct interaction; and *involvement*, which is the obligation to give heed to and be swayed by each other's wishes. The latter dimension is the most complex to measure and most variable. Such a scheme to measure the extent and degree of group associations must be further refined and developed.

Group Studies by Diet and Stress

The relation of diet and stress to coronary heart disease remains an intriguing sociomedical problem. It seems well established that the rice diet, which is low in fat, is an effective means of lowering serum cholesterol. However, at the current stage of knowledge, it would be equally hazardous either to dismiss the stress hypothesis because its mode of bodily action is not clearly understood or to attribute a total causative role to social factors.

To weigh the relative importance of the factors of diet and psychosocial stresses, different groups with various combinations of the two components of diet and stress should be studied. It seems reasonable to suggest that societies may be classified with respect to high- or low-fat diet and to high or low social stress. In the American society, susceptible individuals may virtually invite atherogenesis caused by inordinate amounts of fat in the diet while being under excessive and continuous stresses, whereas the Japanese subsist mainly on a rice diet low in fat and live within a social system that fosters intense work group interaction, which tends to make them less vulnerable to coronary heart disease.

Research along such lines has included studies of men in the service of the Roman Catholic Church. The American and European Trappist Monks eat no meat or eggs and lead a placid life. The American and European Benedictine Monks also lead a subdued life, but do eat meat and eggs regularly.

The Trappists had lower serum cholesterol than the Benedictines.⁷⁹ Barrow and his associates⁸⁰ also found 2.1 per cent of the 1,253 Benedictines and 0.4 per cent of the 684 Trappists showed evidence of atherosclerotic complications, but Groen and his colleagues⁸¹ found no differences between the Benedictines and Trappists in their sample. In a study of 39 Trappists, Calatayud and his associates found no association between serum cholesterol and low-fat diet.⁸² Further results from such epidemiologic and population field studies should prove enlightening in the etiologic understanding of coronary heart disease.

Relation between Coronary Heart Disease and Cerebral Vascular Accidents

Whatever the etiologic explanations advanced for the remarkably low mortality from coronary heart disease in Japan, such explanations must also take into account the significantly higher Japanese mortality from cerebral vascular accidents. The high rate of cerebral vascular accidents is the most notable feature of Japanese mortality, whereas it is the opposite in the Americans.⁸³ The International Atherosclerosis Project⁸⁴ has reported similar prevalence of atherosclerosis in the cerebral arteries as in the coronary arteries, but the changes in cerebral arteries begin one to two decades later and are not as severe. Gordon⁸⁵ and Haenszel and Kurihara⁸⁶ postulate that hypertension rather than atherosclerosis may be the differential factor in the etiology of cerebral accidents. Hypertension may be more likely involved in vascular lesions affecting the central nervous system than in heart disease where the atherosclerotic process is considered more important. Johnson and his associates,⁸⁷ in a study of a population sample in Hiroshima City, document the "most essential role" played by hypertension in the development of cerebral vascular disease. The disparate trends in coronary heart disease and cerebral vascular accidents and the relations of atherosclerosis and hypertension to stress remain an intriguing medical puzzle.

SUMMARY

The foregoing discussion, much of it speculative and impressionistic, constitutes at best a point of departure. This paper has not been the presentation of empirical research, but rather a discussion of a social hypothesis to be verified, amended or discarded. The primary task here has been the description of a framework indicating some of the characteristics of social structure and the dynamics of social processes in Japan that may be of potential relevance to health. The tentative hypothesis advanced needs to be refined and amended theoretically and tried out empirically by cross-cultural comparisons.

The problems involved in the epidemiology of coronary heart disease are multitudinous and complex. At this stage of knowledge, the etiology of cardiovascular disease remains an enigma. Although the diet factor remains dominant in current thinking, the stress hypothesis merits the most intensive probing as alternate or associated explanations of observed relations and differentiations.

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