ROSETO, PENNSYLVANIA 25 YEARS LATER—HIGHLIGHTS OF A MEDICAL AND SOCIOLOGICAL SURVEY[†,‡]

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BANGOR

The study of Roseto, an exclusively Italian-American town in eastern Pennsylvania was prompted by a comment by a local physician, Dr. Benjamin Falcone, who had been practicing there for 17 years. He declared to one of us (SW) that he rarely saw a case of myocardial infarction in any of the 1600 inhabitants of Roseto under age 65.

Settlement of Roseto had begun in 1882 by Italians from a town of the same name, Roseto Val Fortore, in the province of Foggia near the Adriatic coast of Italy. The newcomers endured many hardships as they tried to make a home among the Welsh, Dutch and German ethnic groups in northeastern Pennsylvania. With the help of a wise, enterprising and energetic priest, Father Denisco, however, they were able to accommodate successfully to social exclusion and exploitation by the locally powerful Welsh who had established and developed the slate industry in the area. In 1912 Roseto, Pennsylvania was incorporated as an exclusively Italian-American borough governed by officials elected by the villagers themselves. Considerable economic growth followed and with it a steady diminution of ethnic prejudice. By the time we studied Roseto in the early 1960s it was a thriving and moderately affluent community whose inhabitants were well respected and even envied throughout their corner of eastern Pennsylvania.

We first studied the mortality rates in Roseto from 1955–1961, comparing them with those in four surrounding communities, predominantly Welsh Bangor, an immediately adjacent town that shared with Roseto the same water supply, doctors and medical facilities; originally exclusively German Nazareth; and more ethnically mixed Stroudsburg and East Stroudsburg. Working with death certificates obtained through the

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Pennsylvania Department of Health, we verified the diagnoses by studying hospital records and the records of area physicians. The comparative mortality over the seven year period for men in various age decades is shown in Figure 1. The coronary death rate in Roseto was less than half of that in its four neighbors, in the California Cooperative Study and in the U.S. at large (1).

Encouraged by these findings, beginning in 1962 we undertook a medical survey of the living inhabitants of three of the communities, Roseto and two "control" towns, Bangor and Nazareth (2–6). The results of this study were reported in a monograph published in 1979 (7).

The data from individual histories, physical examinations, electrocardiograms and laboratory tests, as well as detailed inquiries into dietary, drinking and smoking behavior, and lengthy structured psychosocial interviews yielded a picture of a healthy, prosperous, long lived and remarkably cohesive community with not only a low death rate from myocardial infarction but a remarkably low rate of coronary disease among the living, despite the fact that the conventional coronary risk factors were found to be at least as prevalent in Roseto as in the two control communities.

The Roseto that we saw in the early 1960s was sustained by the traditional values of southern Italian villagers. The family, not the

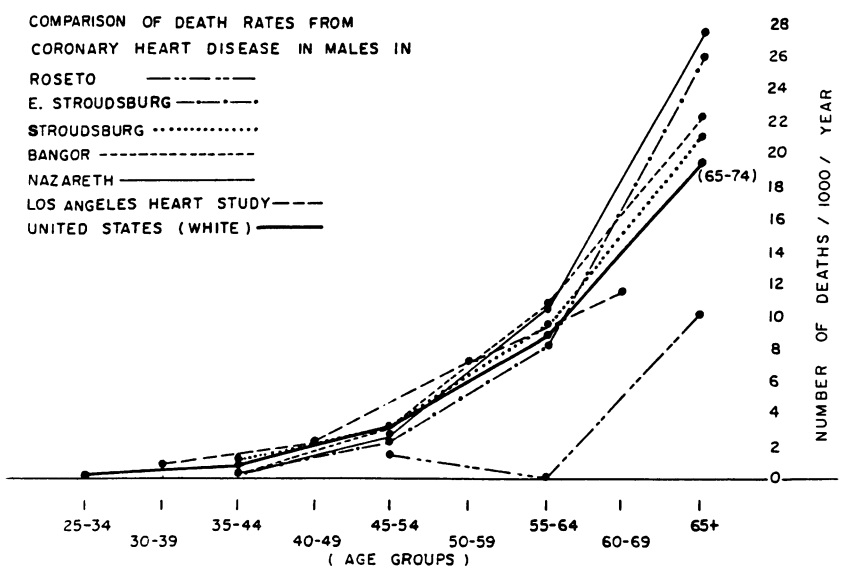

FIG. 1. Comparative mortality from myocardial infarction in men Roseto, 4 nearby communities, the Los Angeles heart study and white males in the U.S. at large.

individual, was the unit of their society. The community was their base of operations and each inhabitant felt a responsibility for its welfare and quality. Most households contained three generations. Rosetans were proud and happy, generous, hospitable and ready to celebrate any small triumph of their citizens. The elderly were not only cherished but, instead of being retired from family and community responsibilities, they were promoted to the "supreme court." There was no shortage of stress among Rosetans. They experienced many of the same social problems and personal conflicts as their neighbors, but they had a philosophy of cohesion with powerful support from family and neighbor and deep religious convictions to shield them against and to counteract the stresses.

The comments made during the psychosocial interviews by the younger Rosetans, those under age 35 led us to suspect that Roseto was due for a sweeping social change. These young men and women, two or three generations removed from the early struggles against the social discrimination and exploitation endured by their grandparents and great grandparents, expressed respect for the old world values and traditions, but no desire to live by them. Therefore, in 1963, we boldly made and recorded a prediction that, should the inhabitants of Roseto abandon their traditional values and behavior, they would lose their relative immunity from fatal myocardial infarction.

At the time of our interval report to this association in 1973, we already had a strong indication that the coronary death rate in Roseto was climbing toward the level of its neighbor, Bangor (8). We began a 25 year follow-up in 1985, replicating our original study and concluding in 1988.

METHOD

Mortality:

To control the possibility that our original 1955–61 mortality figures reflected only a non-significant aberration, we collected and studied all death certificates of Bangor and Roseto residents from 1935–1985.

Health Survey:

Individual histories and physical examinations, EKGs and laboratory studies were performed as before. Changes in dietary, smoking and drinking behavior were documented, exercise habits were estimated and a 40 minute individual psychosocial interval was conducted, closely similar to the original one. Again the homes in the communities were visited and interviews were carried out with key members of each household. To avoid bias in the study, neither the non-Italian partners in mixed ethnic marriages that had occurred in the interval, nor the offspring of those marriages were accepted for examination. We were able either to examine, interview, or collect medical data from personal

physicians on 89% of the survivors of our original survey and on 60% of the total 1985 Roseto population. The data on mortality from all causes among inhabitants of Roseto and Bangor were analyzed according to date and age decade.

RESULTS

Social Change:

The most striking social change was a widespread rejection of a long standing taboo against ostentation. Initially puzzled by the almost universal avoidance of ostentation among the wealthy in Roseto, we learned from a young Italian anthropologist, who was also conducting a study of the town, that fear of ostentation derived from an ancient belief among Italian villagers relating to the evil eye, maloccio (9). Children were taught that any display of wealth or superiority over a neighbor would bring bad luck. We saw evidences in the late 1960s that the taboo had begun to crumble. Expensive automobiles began to appear on the streets of Roseto and occupants of the small, closely placed houses on Garibaldi and other streets of Roseto built and moved to typical suburban ranch houses with spacious lawns on the wooded edges of town. Those who formerly walked to the neighborhood stores for groceries, goods and services, began to drive to the supermarkets elsewhere. Local businesses soon began to close down (Figure 2.). People joined country clubs and attendance at the men's clubs in Roseto declined. There was even a decline in church attendance at the local catholic church. Marriages, which had traditionally been to Italians were becoming ethnically mixed (Figure 3). A couple's first 2 baby girls and boys were not longer uniformly

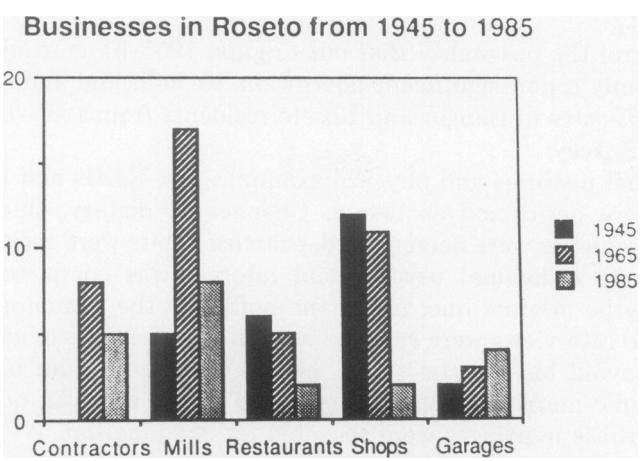

FIG. 2. Changes in Roseto business establishments over a span of 40 years.

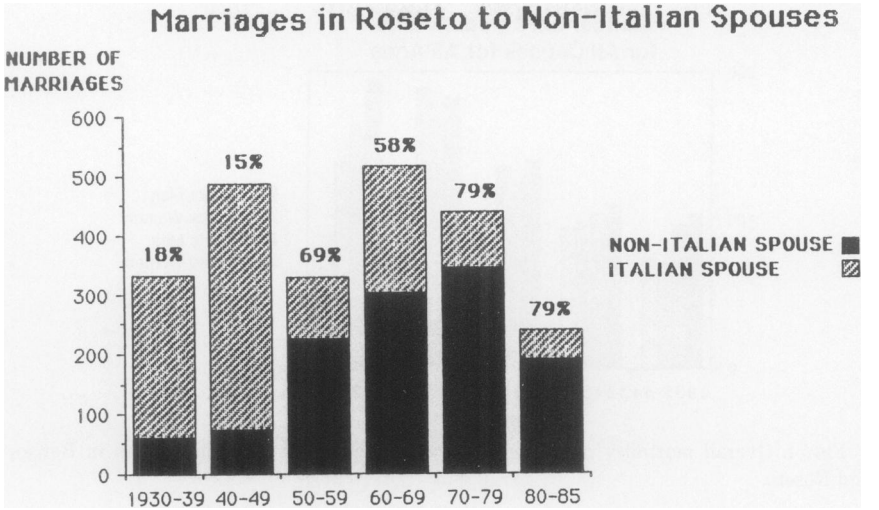

FIG. 3. Marriages of Rosetans to Italians and non-Italians from 1930–1985.

named for grandparents, but now the girls bore such names as Lisa, Kelly, and Allison while the first boy was named for his father rather than grandfather and younger boys might be named after a godfather or no one in particular. As the grandparents lost their prime position there was a strong indication that the individual, not the family, had become the unit of society.

The educational level of Rosetans had climbed steadily since the early days when few had even completed primary school. But even by 1940 less than 10% of the population had completed high school. By 1980, however, 65% had had a high school education and 10% had completed college or professional school. By this time the educational level of the inhabitants of Roseto had exceeded that of Bangor.

Mortality:

The mortality data from all causes occurring in each decade among Bangor and Roseto men and women since 1935 are shown in Figure 4. In Figures 5–6 are data for Roseto and Bangor by sex and age decades on deaths from myocardial infarction and myocardial infarction and congestive heart failure combined. With the respect to all causes the death rates for both towns climbed from decade to decade, suggesting a somewhat shortened life span, especially for Bangor men and women and Roseto men. The death rate for myocardial infarction and for myocardial infarction and congestive failure combined rose much more sharply for the men in both communities. In the case of Roseto men, the rise was mainly after 1964. The peak during the years 1965–74 may possibly

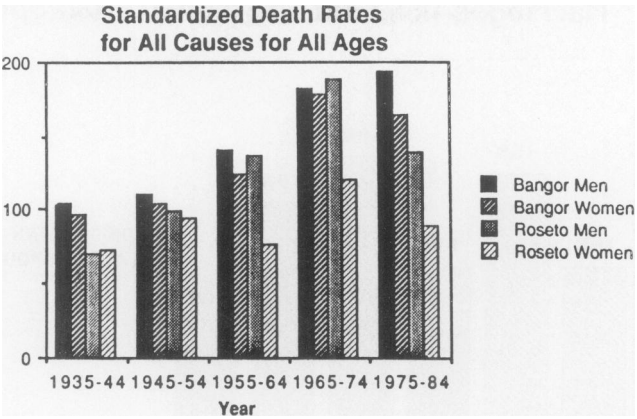

FIG. 4. Overall mortality rates per 1000 by decade among men and women in Bangor and Roseto.

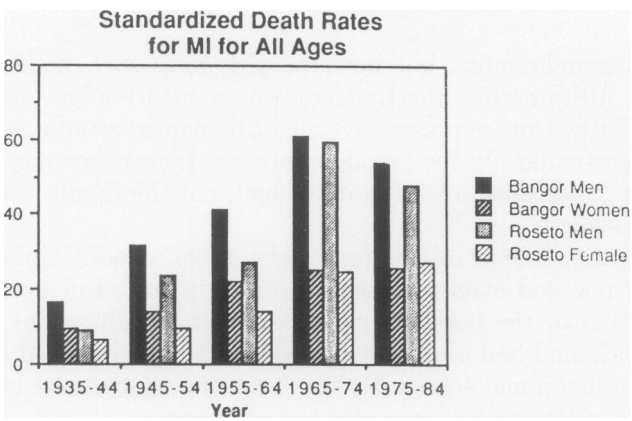

FIG. 5. Mortality rate per 1000 from myocardial infarction among men and women in Bangor and Roseto.

reflect the rapid rate of social change during that period followed, perhaps, by some accommodation.

History & Physical Findings:

The number of Rosetans in the survey who had experienced one or more myocardial infarctions was more than double the 1960s figure. There was a similar increase in symptoms of angina pectoris. Hypertension among Rosetans had increased by an even greater margin, becoming very close to the prevalence among their neighbors in Bangor. Cerebrovascular accidents, too, had more than doubled.

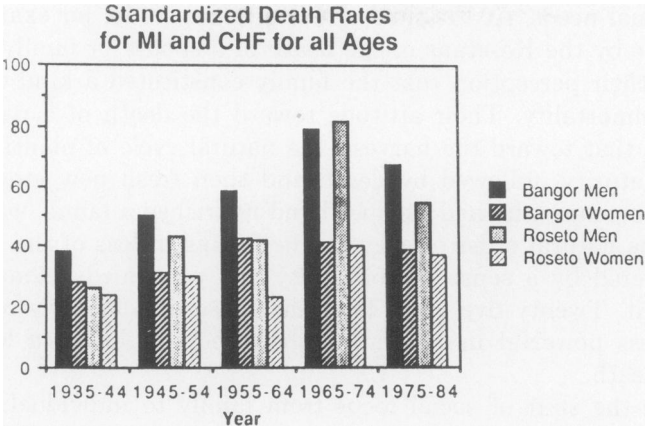

FIG. 6. Mortality rate per 1000 from myocardial infarction plus CHF among men and women in Bangor and Roseto.

CORONARY RISK FACTORS

Exercise—the long standing tradition of Rosetans walking about the town in the evening visiting with neighbors began to fade and by 1985 was hardly observed at all. The degree to which this may have reduced the level of exercise for the Rosetans would be difficult to estimate. Another indication of less exercise might be found in the fact that by 1985 many fewer Rosetans were engaged in laboring jobs than in the 1960s. Otherwise there was very little indication from the histories of a change in exercise behavior over the 25 year period.

Diet—The individual data on dietary habits indicated a clear but modest decrease in the consumption of salt, animal fat and lard, and more use of corn oil in cooking. Consumption of olive oil among Rosetans was less than that of other oils in 1985 as it had been in 1963.

Cholesterol—There was not a significant change in blood cholesterol concentration among Rosetans over the 25 year span.

Smoking—In 1985 we found a decrease in the number of Rosetans who smoked. The decrease was evident only among the men, however.

Drinking—There was relatively little change in drinking habits among Rosetans during the 25 year interval except for a moderate reduction in hard liquor consumption.

Hypertension—As noted above the prevalence of hypertension by history had increased sharply in Roseto over the 25 year interval.

DISCUSSION

From the psychosocial interviews carried out in the present follow-up study there appears to have been a shift of focus from the family needs

to individual needs. At the time of our original study, for example, the acceptance by the Rosetans of the death of a spouse or family member reflected their perception that the family constituted a kind of shared earthly immortality. Their attitude toward the death of a parent was similar to that toward the harvest, the natural cycle of planting, cultivation, maturity, followed by death and then fresh new growth. The death of someone who had produced and nourished a family was, therefore, in the natural order of events. The feeling of loss of the survivors was tempered by a sense of continuity and continued belonging to a family unit. Twenty-five years later the sense of a family's continuity seemed less powerful in mitigating the effects of losing a loved one through death.

Beyond the shift of social focus from family to individual, sharing, once typical of Roseto, had given way to competition. Their community pride and group morale appeared to have been partially displaced by concern with personal status and power. The number of three generation households had diminished greatly. Between 1960 and 1980 the population of Roseto had decreased by 8% but the number of households had increased by the same percentage. Another striking change was that elderly Rosetans, previously cared for at home, had been entered into nursing homes.

The contrasting perceptions and reactions of five generations of Rosetans, as gathered from the interviews, illustrated vividly the course of the rapid social change in the community that accompanied the shifts in health and longevity. Those whose birth dates fell between 1880 and 1899 were first and second generation inhabitants who were either born in Roseto, Pennsylvania or in Italy and had immigrated to the U.S. as young children with their parents. They endured the pain and hardships of the early days and ultimately saw the dawn of a new day with independence, social acceptance and a degree of affluence.

The next generation, born between 1900 and 1919 were children during the early development of the town and its incorporation in 1912. They, too, experienced the social traumas but their youthful horizons were broader than their parents'. Many of them finished high school and some served in World War II. Thereafter, they were ambitious for their children, but held firmly to the traditional values and behavior of the Italian villagers.

To the generation that followed, those born between 1920 and 1939, the early days of hardship and humiliation were remote. They had less need for the spiritual strength and moral support of their neighbors, the church, or even of their family. Many of them graduated from college and even graduate and professional schools a distance away. As already pointed out, not only did many of them marry non-Italians but they

often failed to observe the centuries old custom of naming their children after their grandparents. Moreover, they broke the tradition of maloccio, the prohibition against ostentation, flaunting success and possessions. It was the replies on the sociological interviews of this generation, the participants younger than 35, that caused us in our first study in the early 1960s to predict radical change in the community with loss of its relative immunity to death from myocardial infarction.

The following generation, those born between 1940 and 1959 were too young to have participated in our first study in the 60s but they included the teenagers with whom we organized "rap" sessions. We noted that they had little attachment to their ethnic heritage and were thoroughly entranced by the American Dream.

The final generation for this report, those whose birth dates fell between 1960 and 1979, were youngsters or unborn during the first survey. They were too young to have participated in either Viet Nam or the counter culture of the 60s. It was, therefore, of special interest that discussions with these Rosetans under age 25 during the summer of 1985 revealed an almost plaintive concern over the changing mores, the weakening of traditions and the lack of equanimity among the inhabitants of Roseto. Perhaps there will be another wave of change.

CONCLUSION

Among the inhabitants of a relatively homogeneous community, where beliefs, traditions and behavior of their European forbears were firmly maintained for 2 or 3 generations in this country, there was relative immunity from fatal myocardial infarction. Later, however, in a setting of accelerated social change, coronary disease and hypertension reached levels comparable to those of neighboring towns and the U.S. at large, despite dietary "risk" having changed very little, or, among many individuals, having actually declined.

It appears likely, but by no means certain, that the increased vulnerability to ischaemic heart disease in Roseto can be attributed in part to both the nature and the rapidity of social change. Earlier workers have observed that rapid change itself has been associated with an increased burden of disease (10, 11, 12). There is also evidence from other studies of the apparent benefits of social support, morale and a sense of belonging (13, 14).

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DISCUSSION

Toole (Winston-Salem): The morning began with the Boston marathon and ended with Roseto. I wonder why you don't include the change in exercise habits as a very important factor because you showed how the city had evolved with garages going up, the people moving to suburbs, and therefore using automobiles?

Wolf: When we first studied it, we couldn't tell the difference in exercise between the various communities. The exercise of the Rosetans has certainly decreased for the reasons that you suggest, but so has it in the surrounding communities so we can't attach a whole lot to it at the moment.

Burrows (Boston): I didn't notice any plates of spaghetti in the later dinner tables. Is there a "pasta" factor here? The other thing is what about smoking cigarettes? There are many risk factors to hypertension, coronary disease and strokes. I'm sure you controlled all of those with your studies.

Wolf: We studied the dietary habits and the smoking and the drinking habits of the Rosetans in great detail. As a matter of fact two Ph.D.'s in nutrition came out of the studies. It turns out that whatever dietary changes had occurred in our twenty-five year follow-up from the original study of Roseto had been in the direction of what the American Heart Association calls "prudent." There was less consumption of animal fat, not a great difference, and there was less smoking and, as I said, less exercise.

Austrian (Philadelphia): Do you think the change in marriage patterns and in the genetic homogeneity of the population are exerting any effect on your results?

Wolf: No, because we studied the same people that we saw before and studied the pure Italians.

Wood (Philadelphia): Did personality structure, in terms of Type A and Type B, shift with this changing social situation?

Wolf: We didn't study that on the second go-round and probably should have. We studied it on the first go-round and it was not a very strong support of the Freedman hypothesis, but it went along with that.

Horwitz (Philadelphia): Stewart, I congratulate you on being one of the professors of medicine who are really looking into the situation as far as people and patients are concerned.

Oates (Nashville): You mentioned the animal fat in the diet. Would you comment on olive oil intake in this community?

Wolf: The oil intake of the Rosetans was relatively low in olive oil. They used a great deal more lard than the wives of the people in this room use. One of their favorite dishes was fried peppers. They would fry the peppers in lard and they are very good. Then you'd take a piece of Italian bread and rub it around in the gravy that is left and eat that and that's delicious! The Rosetans were very poor when they came and they are much more prosperous now. They eat everything. I've had many dinners with Rosetan families. They usually have more than one type of meat. When I eat ham I cut the rim of fat off and don't eat it, same way with roast beef. They cut right through and eat it all. We were very elaborate in our study of their diet because we had Ansel Keyes breathing down our necks. Incidentally some of you may have seen the quote from Ansel Keyes in the *New York Times* recently. He said we may have put too much emphasis on cholesterol.