Commentary: What Can We Learn from Studies of Occupational Class and Cardiovascular Disease?

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The occurrence of coronary heart disease (CHD) mirrors a society's stage of economic development. During the 1950s, Yerushalmy and Hilleboe (1) noted a close correlation between the increase in motor vehicle licenses, radio and television ownership, and a rising mortality rate from CHD in the United States. Although this study is seldom cited today except as a reminder of the perils of drawing ecologic inferences, most researchers would agree that for the first half of this century at least, CHD was a disease of affluence. Epidemics of CHD emerged in tandem with increasing prosperity in the Western world; moreover, affluent members of society seemed to be the most afflicted.

Beginning in the mid-1960s, however, as death rates from CHD started to decline in countries such as Britain (2), the United States (3), and New Zealand (4), the burden of disease progressively shifted to those at the lower end of the socioeconomic hierarchy. In most developed countries, the risk of coronary disease is now higher among the poor, and the gap between the rich and the poor continues to widen (5). Meanwhile, CHD is emerging as a major cause of death in many less-developed countries, and rates are rising in the former communist countries of Central and Eastern Europe (6). The ability of CHD to mirror a society's stage of economic development was strikingly illustrated by the patterns of disease among migrants to England and Wales (7). Immigrants from Ireland exhibited the same social class pattern of CHD (more heart attacks in the lower classes) as in England and Wales. By contrast, immigrants from the Indian subcontinent showed little relation between class and mortality. Finally, immigrants from the Caribbean showed the reverse pattern of higher mortality rates in nonmanual classes than in manual classes. Thus, the Afro-Caribbean picture resembled that in England and Wales in the 1930s, South Asia was like England and Wales in the 1950s, and Ireland was similar to contemporary England and Wales.

The article by Pereira et al. (8) in this issue of the Journal documents occupational class differences in cardiovascular risk factors in the country of Mauritius. Mauritius is an island nation about the size of Rhode Island located in the Indian Ocean approximately 500 miles east of Madagascar. According to the 1996 Human Development Report (9), Mauritius is among the most rapidly developing countries of the world, with a gross national product per capita of just over $3,000 (US) in 1993 (compared with $24,740 in the United States), but a strong record of annual growth (with a gross national product that grew 5.5 percent from 1980 to 1993). The country ranked in the top third of the League of Nations—54th out of 174—in terms of human development (average life expectancy at birth, 70.4 years; 81.4 percent adult literacy rate). Television sets are owned by 1 in 4.6 persons (compared with 1 in 1.2 in the United States) and 1 in 2.8 persons own a radio. The price that Mauritians have paid for this record of growth is reflected in the rising rates of mortality from coronary disease and stroke. The social class distribution of cardiovascular risk factors among Mauritian males reveals a pattern echoing that observed in Western countries during the earlier part of the century. According to Pereira et al. (8), male professionals and skilled workers have the highest levels of diastolic blood pressure, serum low density lipoprotein cholesterol (low density lipoprotein cholesterol), postprandial plasma glucose and serum insulin concentrations, body mass index, waist-to-hip ratio, and sedentary behavior. (The pattern among Mauritian women is more complex and merits separate discussion, as seen below). Whether the social class distribution of coronary disease incidence follows the same pattern has not been established; there are no published data (Dr. M. A. Pereira, personal communication, 1997). Remarkably, among the coronary risk

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factors examined, the only one that was less prominent in the upper classes was cigarette smoking (60.6 percent among professional men compared with a staggering 72.3 percent among unskilled workers).

Pereira et al. (8) propose that the information gathered in their investigation could be applied to intervention planning in Mauritius, for example, encouraging more leisure-time physical activity in the professional classes or implementing population-wide smoking cessation programs. While health promotion campaigns are undoubtedly worthwhile, the more fundamental challenge raised by studies of occupational class and coronary risk is to develop a fuller understanding of the social origins of CHD. Ten years ago, Dr. Leonard Syme lamented the fact that “most research on heart disease risk factors [seemed to be] based on the notion that if people are informed of their risk, they will behave in ways designed to lower that risk” (10, p. I-113). The experiences of studies such as the Multiple Risk Factor Intervention Trial have taught us how difficult it is to change behavior unless we take into account the social and cultural context in which the behavior takes place. To succeed in changing population behavior, we need to understand how social structures produce the observed patterns of risk factors at a given stage in the development of a society. Studies that document the occupational class distribution of coronary risk provide vital clues about the ways in which the occurrence of CHD is intimately bound up with the social and cultural context in which we live.

FOCUSBING “UPSTREAM” ON SOCIAL STRATIFICATION

According to the Mauritius survey, professional/skilled and partly skilled workers had markedly lower levels of physical activity than did unskilled workers (Pereira et al. (8), table 2). The difference, in both men and women, was almost entirely attributable to the higher levels of occupational-related physical activity among unskilled workers. In terms of leisure-time physical activity, Mauritian men and women were almost completely sedentary (with the sole exception of professional men, who reported a median 4.8 metabolic equivalent-hours of leisure-time activity per week). This class distribution of physical activity is strongly reminiscent of industrial countries 40 years ago.

A British study of consecutive autopsies at the peak of the CHD epidemic reported that the prevalence of coronary infarcts were most common in sedentary workers, less common in active workers, and least common in workers with strenuous jobs (11). Although the prevalence of coronary disease did not vary by social class within strata of strenuous work, occupations requiring physical exertion were overwhelmingly concentrated in the lower classes, consistent with their lower risk of CHD at the time. However, during subsequent decades, social class patterns of physical activity underwent a complete reversal. Many previously strenuous occupations no longer demanded the heavy labor they once had (12). At the same time, differences in leisure-time physical activity began to account for most of the social class differences in physical activity levels. By 1992, according to one survey, only 17.8 percent of college-educated Americans reported no participation in recreational physical activity compared with 46.5 percent among those with less than a high school education (13). The ability to take up leisure-time exercise is itself determined by social context, so that, to be successful, an intervention must somehow circumvent the barriers and constraints faced by disadvantaged groups attempting to adopt a healthy lifestyle. Common barriers to exercise faced by the less affluent include fear of crime in certain neighborhoods, lack of showers at work, difficulty with arranging child care, or not having the means to purchase equipment or health club membership. In contrasting neighborhoods of Glasgow, Scotland, MacIntyre et al. (14) found marked disparities in the availability of recreational facilities. The more affluent neighborhood had many more facilities that affected one’s chances of engaging in exercise throughout the course of life, for example, playing fields for children, bowling greens for the aged, and tennis courts for everyone else.

The shifting historical patterns of coronary risk by social class teaches us that lifestyle behaviors are merely the surface phenomena obeying some underlying social force. To stem the tide of CHD, epidemiologists need to focus upstream along the chain of causation: social forces → lifestyle differences → health differences (15). One example of an area in which epidemiologists have attempted to focus upstream on social forces is in the conceptualization and measurement of “job strain” (16). Occupational class is a marker of many exposures, including physical hazards, prestige, and access to resources (income and health insurance). Yet, one of the salient features of the labor market is that it segregates the work force into different psychosocial work environments, as measured by the degree of psychologic demands placed on workers and the amount of control they have to deal with the demands. Karasek (17) conjectured that work that is high in demands and low in control (“high strain” jobs) results in long-term deleterious health consequences. This hypothesis has since been
corroborated in more than a dozen case-control and cohort studies showing a link between high-strain jobs and increased risk of CHD (18). In two recently published reports from the Whitehall II cohort study among male and female British civil servants, those with low control at work had an increased 5-year incidence of CHD (19, 20). Moreover, the distribution of workplace control appeared to be the biggest factor contributing to the socioeconomic gradient in CHD risk across civil service employment grade (20). The job strain model has been extended further to incorporate social isolation at work. In this model, the most deleterious work environments are those associated with lack of contact with coworkers and lack of social support from supervisors (21). Considerable evidence points to the harmful consequences of social isolation for cardiovascular disease (22, 23).

The psychosocial conditions of work thus appear to mediate the relation between low social class and high CHD risk. However, given that job conditions associated with lower social class have always been more stressful, how might one then explain the lower CHD rates in this group during the initial phase of the CHD epidemic? The answer lies partly in the changing patterns of occupational physical activity already alluded to: Lower-status jobs used to involve much more physical exertion. Other risk behaviors, such as cigarette smoking, have also shifted in terms of their social class distribution. Hence, lifestyle behaviors such as smoking and sedentary behavior help to explain an important part of the socioeconomic gradient in coronary risk. On the other hand, if we want to intervene to modify these behaviors, we cannot ignore the fact that such “lifestyles” often arise in the context of individuals being trapped in low-control work environments (24).

Focusing on the psychosocial work environment has profound implications for the way we interpret and intervene in occupational class differences in coronary risk. Instead of intervening in individual risk behaviors, it forces us to consider altering the social environment in which workers earn their living. Investing in improving the social environment of work (for example, by redistributing the amount of job autonomy and skill discretion) offers the prospect of breaking the link between occupational class and health outcomes. The challenge faced by a society such as Mauritius is to devise strategies by which to avoid repeating the course of the CHD epidemic in the West, where, despite declines in the average death rate, the disparity between social classes has progressively widened (2, 4), creating a drag on gains in life expectancy. Lessons learned from the industrialized world could (and should) be applied to the developing world.

GENDER, OCCUPATIONAL CLASS, AND CHD

The rise in female labor force participation in industrial economies is one of the most remarkable social facts of the 20th century. Yet, one of the least-understood features of CHD epidemics worldwide is how gender plays out in occupational class disparities in coronary risk. Despite the fact that labor markets tend to segregate women into occupations with lower levels of job autonomy (16), earlier speculations that women would suffer a corresponding increase in CHD risk have not been borne out. Moreover, in the industrialized world, CHD mortality rates among women have always been lower among the upper social classes (12). In Mauritius, the trend in coronary risk factors across occupations is much less consistent in women than in men.

It is important to note that participation in the female labor force in Mauritius is much lower (30 percent) compared with the industrial world (such as 56.8 percent in the United States) (9). The finding that homemakers in Mauritius had by far the worst coronary risk factor profile suggests that a different type of social process may be at work, namely, gender inequalities in political and economic power. Interestingly, although Mauritius ranked 54th in the world in terms of overall human development, the country’s position on the United Nations Development Program’s gender empowerment measure was 65th in the League of Nations (The measure is based on women’s shares of parliamentary representation; administrative, managerial, professional, and technical positions in the work force; and percent share of the population). Only 2.9 percent of the seats in Parliament were held by women (compared with the developing world average of 10.8 percent), and 25 percent of the earned income shares accrued to employed women (compared with 31 percent in the rest of the developing world and 40 percent in the United States) (9). Although we still lack a complete understanding of the links between women’s status in society and their health status, it has become increasingly evident that the theoretic frameworks for understanding the social production of disease in men are inadequate for the purposes of explaining the health of women (25, 26). Among paid workers, men and women have different combinations of adverse work and home circumstances. In spite of rising participation of women in the work force, in most societies the traditional gender role patterns often persist with regard to home and family responsibilities (27). Thus, predictions of health using information about work conditions alone seem to be less successful for women than for men (28). Accounting for the health of women is likely to require a much broader conceptualization of gender relations not just at work, but also in domestic settings and in society at large.
CONCLUSION

Socioeconomic disparities in CHD risk represent an important challenge for both research and intervention. As disconcerting as it may seem, public health must face the possibility that the health promotion campaigns implemented in industrialized countries during the past decades may have actually contributed to the worsening socioeconomic gradient in CHD. This is because individually targeted interventions tend to selectively benefit the most privileged members of society, who are able to absorb and act on messages to adopt healthier lifestyles. On the other hand, the lesson from studies of occupational class and coronary risk is clear and is applicable to both industrial and developing countries: The origins of CHD epidemics are largely social, as the solutions must be.

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