

Editorial

Behavioral causes of diseases

by Paul C. Y. Chen

DISEASE STATES are often the consequences of multiple factors which include exogenous factors, both biotic (e.g. micro organisms and parasites) and non-biotic factors (e.g. air pollution) as well as endogenous factors (e.g. genetic), and behavioral factors namely psychological factors (e.g. stresses) and socio-cultural factors.

Behavioral factors play an important part in the causation of diseases particularly among mothers and children. In fact human behavioral patterns not only contribute to the causation of diseases but also to the perpetuation of many disease states particularly in relation to maternal health, nutritional diseases, both communicable and non-communicable diseases and to the pattern of medical care that persists in any community.

Behavioral patterns in relation to maternal health

In many societies, early teenage marriage is culturally encouraged and legally permitted (e.g. in Latin America the legal minimum age of marriage is 12 years for the bride). In many Asian and African countries early marriage is not only culturally encouraged but also enforced upon young girls just past puberty (e.g. 40% of the scheduled castes (lowest social castes) in India, and 29.4% of Muslim girls in Iran were married when each was 10 to 14 years of age, WHO, 1976).

In cultures where early marriage is encouraged, the teenage mother is exposed to a higher risk of maternal mortality. The teenage mother is often unable to cope with the problems of marriage and motherhood with the result that divorces tend to be

high (e.g. in traditional Kelantan and Trengganu during the period 1948-1957, the per cent of divorces against marriages were 71% and 60% respectively, Gordon, 1964).

In many cultures, the inability to conceive is an embarrassment particularly to the wife. Among some Kadazan of Sabah, a couple who have no children are not considered as adults. In some cultures, pregnancy is thought to be a "dangerous" period when taboos must be carefully observed to avoid ill-health, difficult labour, or a malformed child.

Maternal mortality in the developing world is extremely high. Among the several factors, the standard of obstetrical care is perhaps one of the most important. In many developing countries 50-90% of births are managed by untrained individuals. These traditional birth attendants are known by a variety of names such as *ambuya* (Rhodesia), *bidan kampung* (Malaysia), *dai* (India), *hilot* (Philippines) and *mohtamyae* (Thailand).

In many cultures, this is believed to be a period when both the new mother and her infant are believed to be very vulnerable and many precautions are advocated. In some cultures, the mother must gorge herself with foods. In others, she carefully avoids all "cold" foods. Thus among rural Malays these restrictions often mean that the new mother eats only rice, pepper, chillies, dried and salted fish, and coffee. Such restricted diets have been found to result in low serum levels for folic-acid, carotene and iron (Wilson *et al.*, 1970).

Behavioral patterns in relation to nutritional diseases

Each culture has evolved over the centuries a series of cultural beliefs concerning foods. Not all edible materials are eaten, some foods being classified as non-foods, others as cultural super-foods, "heating" and "cooling" foods, yet others as medicinal foods, ceremonial foods, prestige foods, communication foods, sympathetic magic foods and taboo foods (Chen, 1977a).

Man has thus not only learnt to eat some edible materials in order to stay alive but has also in a number of varied ways given symbolic meaning to many of these foods. As long as there is an abundance of food, these idiosyncrasies will probably be of little significance from the point of view of protein-calorie malnutrition. Obesity could be a problem if there is too much food available. On the other hand, behavioral patterns in relation to foods in many areas of the developing world are a major contributory factor to the prevalence of protein-calorie malnutrition.

In Malaysia, traditional beliefs concerning the causation of vitamin A deficiency, tied in to the belief that papaya, a rich source of beta-Carotene, is a "cooling" food that predisposes to night-blindness, is an example of one behavioral pattern that leads to a nutritional disease. Health education to change this behavioral pattern would have far more important long term effects than any amount of chemotherapy (Chen, 1972).

Behavioral patterns in relation to communicable diseases

The behavioral patterns of many cultures predispose to the development of communicable diseases. For example, dengue haemorrhagic fever is spread by the mosquito vector *Aedes aegypti* which in turn owes many of its breeding places to man himself. Rain water stored in large drums, in Shanghai jars and buckets, form common breeding places. Water found in ant-traps, flower pots, discarded tin cans, bottles, and old tyres are favourite breeding places of the *Aedes aegypti*. The latex cup on the rubber tree is a common breeding place of another vector *Aedes albopictus*.

Filariasis transmission and control are dependent on human behaviour and activities. For example, man-made breeding sites of its vectors are an expression of human behavioral activities (Dunn, 1974). Thus, in rural filariasis, caused by *Brugia malayi* transmitted by *Mansonia* mosquitoes, the larvae of these *Mansonia* mosquitoes are harboured by aquatic plants such as the water cabbage, *Pistia*

stratiotes, which are often specially cultivated by farmers in ponds as food for pigs. Urban filariasis caused by *Wuchereria bancrofti*, which recently has been increasing in incidence in the slums of many large Asian cities such as Jakarta, is transmitted by the *Culex fatigans* which breeds in the highly polluted gutters of such slums. Man-made rice-fields are the breeding sites of *Culex tritaenorrhyncus* that transmits Japanese B Encephalitis.

These are just three of the many communicable diseases that are related to human behavioral patterns. Others would include venereal diseases, cholera, typhoid, amoebiasis, gastroenteritis from bottle-feeding, helminthiasis and many other parasitic diseases.

Behavioral patterns in relation to non-communicable diseases

Human behavioral patterns have for a long time been linked to a number of non-communicable diseases. Osteomalacia is seen in the Bedouin of the Negev Desert where the women do not receive sufficient sunlight (Groen *et al.*, 1962). Cancer of the cervix is known to be associated with sexual activity (Martin, 1967). Cancer of the lung as well as coronary artery disease have been associated with smoking. Cancer of the tongue and buccal mucosa is associated in some Indians with the habit of placing the lighted end of the cigarette into the mouth. Cirrhosis of the liver is often caused by alcoholic consumption which itself is often an important part of social behaviour in many cultures.

To illustrate this link between human behaviour and a non-communicable disease, the problem of accidents can be briefly looked at. Dangerous electrical fittings, poisons, hot water, boiling oils, and firearms carelessly placed within the reach of young children are man-made death-traps. Swimming pools, bathtubs, buckets of water and wells regularly claim the lives of young children. On the streets, man-made death-traps (vehicles) often driven carelessly by individuals under the influence of alcohol or too exhausted to stay alert are a regular and important cause of injury and death in many parts of the world particularly in the developed countries.

Behavioural patterns in relation to medical care

Practically every culture has devised its own system of medical care to cater to its sick. Some systems such as modern scientific medicine have much to offer particularly from the point of view of physical ill-health, while other systems are relatively ineffective from the physical point of view. But

such systems often have their own merits particularly from the point of view of the psychological well-being of the patient and his family.

In many rural areas in the developing world, for cultural, social and psychological reasons, the sick individual is very much tempted to retain the familiar traditional system that he knows so well even when it would seem to us to be hopelessly inadequate for his needs. Perhaps the answer is for the two systems to work together to provide the patient with the best from both worlds (Chen, 1975).

In the maternal care of the rural Malay mother, we now combine the technological skills of the trained modern midwife with the gentle reassuring touch and personality of the old traditional birth attendant, the two working together as one team (Chen, 1977b). The trained midwife conducts the actual delivery and cuts the umbilical cord while the traditional birth attendant is there to provide the traditional home-care, wash soiled linen, bury the placenta in the culturally accepted manner, massage the body of the new mother, and assist her in establishing breast feeding (Chen, 1976).

Health education

Human behaviour and activities, as indicated earlier, often contribute to the causation of diseases. In fact many diseases can be described as man-made. Obviously the control and management of these man-made disease problems will have to be based

to a large extent upon efforts directed at the contributory behavioural patterns themselves. To this extent, much research as well as health education needs to be directed at the behavioural aspects of disease problems.

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