

What have we learnt about the cultural, social and behavioural determinants of health? From Selected Readings to the first Health Transition Workshop



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Abstract

The article explores the issue of whether the holding of an international workshop in Canberra in 1989, and the preparation of papers for it, increased our knowledge of the cultural, social and behavioural determinants of health and whether the publication of the proceedings placed new knowledge in the public domain. The approach adopted is to compare those proceedings with a collection of selected readings on the subject made shortly before as part of the same program and also with certain other publications. The conclusions reached are that, in addition to having stimulated interest in the field, the workshop and its proceedings furthered knowledge in at least five important areas: (1) the existence of mortality-prone households; (2) the impact of differing cultural situations of women in terms of individualism on their children's survival; (3) the mechanisms whereby maternal education is translated into child survival; (4) the impact of culture and ethnicity on mortality; and (5) indirect indices of the impact of care. The workshop failed to contribute to substantial advances (or draw attention to the lack of advance) in the following areas: (1) the measurement of Third World morbidity or health; (2) adult health transition; (3) the impact of radicalism or egalitarianism in communities other than Kerala and Sri Lanka on mortality; (4) the impact of lifestyle diseases on Third World mortality; (5) the identification of economically optimum mixes of social change and the provision of health services in reducing mortality and improving health; and (6) the employment of health transition knowledge in the reduction of mortality and the improvement of health.

The term *health transition* is employed in this article, and in this journal, to mean the cultural, social and behavioural determinants of health: that is those determinants other than medical interventions and income, although health transition studies certainly encompass the interactions between these variables and health transition ones.

An exploratory program in the health transition field¹ has been marked by various publications and related events. In 1989 fourteen papers in the field were reprinted in a volume entitled *Selected Readings in the Cultural, Social and Behavioural Determinants of Health* (Caldwell & Santow 1989). It is significant that all these papers had first been published in the 1980s, the majority in the second half of the decade². In 1989, too, three Health Transition Workshops were organized: the first, on the substantive findings in the area, was held at the Australian National University, Canberra; the second,

¹ The Rockefeller Foundation funded an Exploratory Program in Health Transition. That program fully funded the publication of the *Selected Readings*, partly funded the first Health Transition Workshop in Canberra, 15-19 May 1989 (with other assistance from the Australian International Development Assistance Bureau, the National Centre for Epidemiology and Population Health, and more generally from the Australian National University, especially from the Research School of Social Sciences and its Department of Demography), and fully funded the publication of the proceedings, *What We Know About Health Transition*.

² In the text the papers are all dated, as are the *Selected Readings*, 1989, but in the References their original forms of publication and the dates are also provided.

on the methodology suited to such work, was held at the London School of Hygiene and Tropical Medicine; and the third, on the development of effective policies, was at Harvard University. Papers from the first workshop have now been published as *What We Know about Health Transition: The Cultural, Social and Behavioural Determinants of Health. The Proceedings of an International Workshop, Canberra, May, 1989* (Caldwell, Findley et al.1990).

This article attempts to evaluate progress in the field and to suggest potential areas for research by comparing these two publications. It does so by subdividing the research into: (1) the identification of variables influencing health, (2) the mechanisms whereby that influence is achieved, and (3) the production of health.

One or two other publications are briefly referred to: Hilderbrand et al. (1985); Mensch, Lentzner & Preston (1985), which was too long to include in Caldwell & Santow (1989), but which remains the most important source on the impact of ethnicity on child mortality; and Caldwell (1990b) which is a kind of postscript to the debate on historical differentials found in these volumes.

Nearly all papers in both volumes agree that, although health transition variables are elusive, as is demonstrated by the recent date of most of the research, they are of great importance in explaining global mortality decline. They have the potential for contributing as much as medical intervention or economic development toward the achievement of good health for all. Why, then, has research been delayed and why does it often prove to be difficult? Underwood and Gray (1990:607) provided part of the answer:

Many broadminded medical scientists do not dismiss the social origins of disease, or the central role of society and culture to disease treatment and prevention, but consider such areas unresearchable... they turn their faces from the muck and mystery of humankind to the safer and more easily controlled world of the microscope and the laboratory.

Nevertheless, they felt that the effort had great potential for improving health, quoting Barnes: 'In the natural sciences, law-like generalizations help us to understand how things work, whereas in the social sciences generalizations help us on the way to making things work differently'(Barnes 1989 cited in Underwood and Gray,1990:608).

Our task here is to evaluate the recent advances toward satisfactory generalizations in the health transition field as evidenced by the advances reported to the first Health Transition Workshop. It should be stressed that many of the generalizations about cultural and social impacts depend ultimately on contrasts being made between cultures or societies. Except at the level of statistics, most researchers are not in a position to do this. Instead, they report on social differences within one society and probably identify smaller contrasts than those existing between societies. The Workshop did not change this situation.

Influences

The most firmly established generalization in *Selected Readings* was that parental education, particularly maternal education, has a major impact on the survival of children even when controlled for income and other indices of material well-being (Mensch, Lentzner & Preston 1985; Basu,1989; Caldwell 1989a; Cleland & van Ginneken 1989; Mosley 1989). There was agreement that any kind of modern schooling reduces mortality levels and that the phenomenon occurs in all parts of the Third World. Furthermore, the change is linear, with a reduction in child mortality of 7-9 per cent for each additional year of maternal education.

Additional evidence in the Workshop was limited. Cleland (1990) produced a wide range of evidence to show that the greatest impact of maternal education on child mortality is among toddlers rather than infants. He also explored the morbidity consequences of maternal education, reporting that the clear differentials evidenced in the case of mortality were not paralleled by similar differentials in

studies of the incidence of diarrhoea and some other conditions in children. He thought it possible that the data were impaired by cultural factors or by education itself in that educated mothers were more sensitive to child illness and were more likely to report it. It is, of course, possible that educated mothers are even more effective in preventing sick children from dying than in protecting them from illness in the first place. The only paper which reported discordant findings in terms of education was that of Millard, Ferguson and Khaila (1990) and this was probably the result of small numbers and the type of measurement adopted. Lindenbaum (1990) drew on Borthwick (1984:106) to show that female education was advocated in Bengal a century ago in order to produce strong children.

The Workshop did little to lead research into the important but more difficult field of relating education to the educated person's own survival rather than that of her or his children. The research is more difficult because, while parents survive to report on deceased children, this is not the case with an individual's own death. Cleland (1990) cited the work of Valkonen (1987) on European men. This may be important not only for adults but even for older children for Caldwell and Caldwell (1990) have explained the fall in excess female mortality after five years of age in south Asia by the increasing reliance of children on their own efforts. This is significant, as Lindenbaum (1990) points out, because of the much greater number of boys than girls in school.

Selected Readings contained one chapter (Caldwell, 1989b) which argued that the impact of education on child mortality via parental education has dominated most research interest although the impact via the level of education of the whole society is at least as great. Thus, the health returns achieved by a society from a major investment in education are almost certainly understated if they are calculated on the basis of existing differentials within the society. This theme was not pursued further at the Workshop.

The demonstrations by Hilderbrand et al. (1985) that there are cultural differentials in child mortality between nearly illiterate societies, and by Mensch, Lentzner and Preston (1985) that ethnicity in a plural society is the only social variable that can compete with parental education as a determinant of child mortality were supported in the Workshop by two studies. Cantrelle and Locoh (1990) showed that in both Cameroon and Zaire ethnicity determines even more than maternal education the survival of children. Raharjo and Corner (1990) demonstrated that in West Sumatra immigrant Javanese were much more likely to immunize their children than the indigenous Acehnese.

The relation between the position of women in societies and the survival of their children is probably widely accepted while being little researched. In *Selected Readings*, Caldwell (1989a) adduced evidence by comparing societies, while Chen, Huq and D'Souza (1989) and Khan et al. 1989) came to similar conclusions from the discrimination against women in rural Bangladesh and India respectively. This issue was not pursued further in the Workshop, perhaps because it was accepted.

In *Selected Readings*, Caldwell (1989a) drew attention to the importance of a radical or democratic tradition in creating the demand for education and health services and also in making the health services work effectively. Two papers at the Workshop carried forward this line of enquiry. Nag (1990) compared rural Kerala and West Bengal, showing that, in spite of similar voting patterns, attitudes towards fighting for one's rights were much more deeply entrenched in Kerala and were almost certainly an important explanation for decisively lower mortality. An excellent example was provided by Nations and Farias (1990) of radicalism, which they call 'cultural creativity', at work in a poor rural area of Northeast Brazil. There a focused movement of community discontent managed to secure better health services and to achieve community collaboration in the employment of oral rehydration to combat diarrhoea among children.

In *Selected Readings*, Caldwell (1989a) documented the very different health achievements in areas of different religious persuasion, with Buddhist and Hindu populations doing relatively well compared

with Islamic areas in North Africa, the Middle East and South Asia. This work has not been pursued further.

In *Selected Readings*, Caldwell (1989a) had reported that the practice of family planning was almost as strongly associated with low child mortality as was maternal education. One reason that might be advanced is that parents are more desperate to keep a restricted number of children alive. The position is probably more complex than this and is probably explained by downward wealth flows. Parents concentrate more on children and they become more costly, thus necessitating an effort to control their numbers. This was taken much further by Bledsoe (1990) at the Workshop when she reported on a 1981-82 study of the Mende in Sierra Leone. Not only is the mortality of children related to the level of care but that level of care depends on the valuation placed on the children which in turn is determined by the relationship they bear to the adults with whom they live. Their greatest chance of survival comes when they are completely identified with the adults with whom they live in the sense that they are being cared for by a parental union of their biological mother and biological father. Where only one member of that union is their parent, the parent cannot provide them with as much care and affection as is given to the children of the new union for fear of jeopardizing that union. Bledsoe reported:

I conclude that both women and men feel pressure to allocate resources disproportionately to children by unions they most value at present; thus adults treat children in ways that reflect, or shape, their own relationships to adults whom the children represent...(Bledsoe 1990:561).

She also concluded that fully fostered children were treated less well, fed less and provided more rarely with medical care than other children. The care they did receive was proportionate to the status of the families from which they came. Emotional and material flows were not merely from adults to children but also from husbands to wives in a way that could determine the level of well-being and care received not only by the wives but also by each wife's children. In polygynous marriages, the assistance given to each wife depends on her seniority, education, family of origin, business success and also personal charm. The least care given to children occurs when their parents are not married. The father is much less likely to contribute support, the children are breastfed for a shorter period and are much more likely to be placed with foster parents. This relative deprivation has been increased by the Christian concept of illegitimacy, and in the more Christian areas mothers rarely visit their illegitimate children in foster homes. These findings clearly link cultural and social attitudes to care, and care to health, treatment and survival. They also suggest that wealth flow studies should identify whole networks of relationships.

Mechanisms

Whereas the Workshop achieved only modest advances over *Selected Readings* in terms of identifying or more closely specifying the cultural and social determinants of health, it did much better in terms of throwing further light on the mechanisms whereby those determinants achieve their impact on health or survival levels. This was undoubtedly an advance as agreement on the identification of cultural and social determinants ultimately depends on being able to show that they could actually have achieved an impact.

One sign that an interest in health transition was taking firmer roots was a growing concern with health transition in history. *Selected Readings* had presented a debate between Preston (1989) and Caldwell (1989a) about the interpretation of late 19th and early 20th century socio-economic differentials in child survival in the United States and Australia. At the Workshop, Ewbank and Preston (1990) presented further evidence from the 1900 and 1910 US censuses and from birth registration for the period 1923-29. They established that the first three decades of the present century witnessed a sharp increase in American child mortality differentials by father's occupation and that these were not the

result of increases in income differentials or urbanization. They argued that this had occurred during the period of the most intensive activities of the Child Welfare Movement which had stressed the role of the mother in ensuring child care and survival. It might be noted that this period witnessed a great stress in the health field on the importance of such behavioural factors and their ability to compensate for income deprivation. Ewbank and Preston argued that 18th century writers recognized the father as the major determinant of household behaviour and consequently of decisions about child care, and accordingly directed books on child care at him. By the late 19th century, family change ensured that such writings would be directed at the mother. With the advent of the germ theory of infection the home was shown to be the place of greatest danger and mothers were required to sustain breastfeeding, to create safe and hygienic conditions in the home, and to consult doctors as soon as they were needed. Even the doctors were likely to be as valuable for the behavioural advice they offered as for their treatment. Ewbank and Preston echoed the views of Underwood and Gray in concluding that the personal factor in health care has been largely ignored, at least partly because of the problems in measuring it.

Van de Walle and van de Walle (1990) investigated an earlier period in European history, concluding that

It seems that the elites universally cared, bonded, treated their children as prized individuals; they did not know very much about how to cope with childrearing, nutrition and disease, and often adopted health practices that seem wrong from the point of view of modern paediatrics (van de Walle & van de Walle 1990:152).

There is no suggestion that they did not behave 'scientifically' in accordance with the knowledge of their day. Rather it was the knowledge base that was defective. The activities of the Mother and Child movements at the beginning of the present century have been well documented for most English-speaking countries, certainly for the United States, Canada, Britain, Australia and New Zealand. What is unexpected is the evidence from Borthwick (1984), cited by Lindenbaum (1990), that the movement also focused its attention at the same time, and with the same success, on the elite of Bengal.

The second aspect of the Ewbank and Preston (1990) paper, and even more the Preston (1989) chapter, had been the relatively low socio-economic differentials in child survival in the West at the beginning of the present century. Ewbank and Preston explained much of this by a failure even among the better-off to have absorbed the implications of the germ theory of infection; they supported their argument with the evidence of increasing differentials in child mortality by parental socio-economic characteristics during the first three decades of the present century as the Child Welfare movement galvanized parents into increasingly careful child-rearing behaviour. Preston (1989) had supported his argument as to the relative ignorance of the West at the beginning of the present century by contrasting the low child mortality differentials by parental socio-economic status at that time with the much greater differentials found in the contemporary Third World. Caldwell (1989a) accepted the argument that the Child Welfare movement had been responsible for a significant part of the widening differentials in the West between 1900 and 1930 but also suspected that, even before sulpha drugs and antibiotics, medicine had an increasing role to play and that this could be more quickly identified by the more educated and bought more easily by the richer. However, he was most concerned with the demonstration of the contrast between the modest differentials in the West and the very great differentials by parental education in the contemporary Third World; and has recently returned to this theme. Caldwell (1990b) argues that, as science slowly developed in the West, so did the scientific attitude and the willingness of individuals to collaborate fully and without reservation with science and technology: indeed, the rise in science and the belief in it had been a product of society's attitudes. Advanced education only modestly reinforced these attitudes. The same is not true in much of the contemporary Third World. The science and medical technology has been imported from another culture. The willingness to co-operate with it,

without scepticism, misgivings or succumbing to the temptations offered by alternative theories of illness and treatment, can also be imported. That willingness is a central message of Western education. This explains why individuals in the Third World adopt the imported scientific culture in proportion to the duration of their exposure to it and why even a little schooling can begin the process of identification with modern medicine.

The Workshop yielded other themes with regard to historic change. Smith (1990) analysed the 1937-38 polio epidemic in Australia to show that the necessary behavioural changes did not come about until medical science correctly identified the mode of infection and translated this into behavioural messages. Previously, much effort had been wasted in all kinds of defensive behaviour, but, once it was shown that the infective organisms were ingested with faecal particles, then concentration was possible, at least while the epidemic persisted, on careful washing of the hands with soap and water both after defaecation and before eating.

Palloni (1990) re-examined the Latin American mortality decline and found that it was more protracted, closer to the European model, and less due to medical miracles than has been suggested. On the other hand, he explained the decline largely in terms of broad social phenomena of which rising living standards were central, 'strongly associated with governmental commitments to health improvements' (p.211). He stressed 'the organization of social programs aimed at providing information and services to the most vulnerable sections of the population' (p.200). Clearly, although the stress may be different, behavioural change is implied, and indeed the programs stressed appear to have been akin to those of the Infant Welfare movement.

In *Selected Readings*, Simons (1989) had argued convincingly that much of the health transition analysis of behaviour had been put forward more cogently by social psychologists in their identifications of the internal and external locus of control and of the absolute or relative commitment to child health. Clearly, the internal locus of control and the absolute commitment to child health may be ways of more exactly describing what Caldwell meant by a culture committed to science, while the former is related also to the women's movement's drive for empowerment. Whatever the terminology, the underlying thrust of the arguments was supported by Lindenbaum (1990), drawing on research in rural Bangladesh by Guldan (1986):

Her finding that education transforms the child care practices of mothers – especially their patterns of time use and the purposiveness and intentionality of their child-feeding behaviours – may throw some light on the way in which education changes the behaviours without changing world views (Guldan 1986:

The argument is not that education achieves no behavioural changes in more science-based societies, but merely that the increments are smaller. Indeed, Ewan (1990) showed that, in contemporary Australia, heart disease beliefs and behaviour differed significantly between those who had been to university and those who had not, the former being more inner-directed and the latter more sceptical and more fatalistic.

Caldwell et al. (1989) had argued in *Selected Readings* that timely treatment in Sri Lanka was attributable not only to the level of education but also to an earlier cultural sensitivity to illness in a society where illness had always been regarded as a situation where action was required. At the Workshop, Sushama (1990) extended these findings to Kerala in southwest India.

One of the most promising lines of research reported to the Workshop was on mortality-prone households with their implication that some persons can be identified as sources of health-risk behaviour to a much greater extent than their socio-economic characteristics would imply. Das Gupta (1990), working in rural Punjab, showed that there was a strong tendency for child deaths to cluster within a small number of families. One-eighth of the families accounted for almost two-thirds of child

deaths, and were twelve times more likely to lose a child than was the rest of the population. This finding is related to a research tradition deriving from work in Newcastle-on-Tyne, UK, half a century ago. Das Gupta concluded that 'this clustering of deaths can be explained to a very large extent by the basic abilities and personality characteristics of the mother, independent of education, occupation, income and wealth' (p.442). This finding does not, of course, invalidate health transition interventions to change behaviour, and, indeed, was probably assumed in the underlying philosophy of the Child Welfare movement. Maddocks (1990), drawing on experience in Papua New Guinea, reported that the healthiest children, at least as measured by weight for age, came from 'successful households', which however he related strongly to a history of regular incomes and relatively high levels of education among the adults.

Perhaps the most challenging research question presented by the earlier work was just how the education-health link worked. What were the mechanisms by which educated mothers prevented their children from dying? Lindenbaum, Chakraborty and Elias (1989) had asked men what effect education had on women. The men reported that educated women were more self-sufficient and also that they kept the home cleaner, stopped their children from getting sick, and cared better for those who did fall ill. Cleland and van Ginneken (1989) had assessed the available evidence as showing that about half the crude maternal educational differential in child survival can be attributed to economic advantage, while at least part of the balance is explained by educated mothers employing to a greater extent modern health services for their children's treatment.

At the Workshop, at least seven papers addressed these questions. Caldwell, Caldwell et al. (1990) reported from projects in West Africa, South India and Sri Lanka that in each of the areas studied females who had been to school were subsequently more likely to identify themselves with modern institutions and to take their children to health centres for treatment. The work in South India showed that, with increasing education, mothers were more likely to demand that their sick children receive treatment, were less constrained by their relatives in taking action, were more likely to seek modern treatment, were given more time by the doctor to explain the illness and to receive instruction, were more likely to follow those instructions closely and to persist with treatment, and were much more likely to report back if the treatment did not seem to be working. The time spent with the doctor is probably of crucial importance as, in rural conditions with no back-up pathological services, Kleinman (1980) estimates that over 80 per cent of the correctness of diagnosis depends on interpreting the history of the case. Doctors do not expect to understand illiterate women and do not expect to be understood by them. The failure of illiterate, poor and low-caste women to report continuing sickness is partly social in that they believe that they are telling the doctor he was wrong and partly pre-scientific in that they draw on the non-probabilistic Ayurvedic tradition which holds that the healer will have indubitably identified the illness and prescribed the best treatment. The anthropological side of the work showed that educated mothers behaved more sensibly, as judged by the criteria of the observers, gave sick children more rest, and were more insistent about buying food from the market when household stocks ran low. Nevertheless, such observations were less convincingly documented because they were harder, but probably not impossible, to quantify.

In rural Bangladesh, Lindenbaum (1990) showed that education imparts less a health message than a way of life: those who have been to school are cleaner and more careful with their children because that is how educated people behave. Nevertheless, she did find that health messages were most effective when aimed at educated women. Das Gupta (1990), in her Punjab research, was able to demonstrate a relationship between the greater impact of education on child survival after controlling for both socio-economic variables and those acts of care such as employing medical services which she specifically measured. The rest she attributed to the more general and less measurable aspects of household care. In

the Matlab villages of Bangladesh, Bhuiya, Streatfield and Meyer (1990) were able to show significant correlations of both the education and economic status of women with the knowledge of the cause of diarrhoea and infantile tetanus, with awareness of the danger of drinking unboiled water, and with washing with soap after defaecation. Often the right actions were taken on the wrong grounds: dysentery may be successfully combated even though fewer than two per cent of the population regard it as originating in contaminated water or food while 93 per cent believe that it is caused by eating too much fish and spicy food.

Cleland (1990) produced an excellent overall summary of ongoing research in this area. He employed evidence, mostly from South Asia, to show that there is a weaker relationship between education and health knowledge than between education and good health behaviour. He concluded that the educated just obey the dictates of modern medicine. He also reported that the DHS program and other studies show clearly that educated mothers use health services more and specifically are more likely to employ oral rehydration treatment. His explanation for the high 1-4 years of age mortality differential by education is more contentious: 'At these ages, the child is mobile and even the most protective and hygiene-conscious mother would find it difficult to reduce exposure risks in a highly contaminated environment' (Cleland, 1990:411). Our experience in South India is that the education differential exists in the same external environments and it is precisely this challenge which the educated mother meets best. The only reason that the differential is greater than among infants is not greater toddler mobility but more uniform protection of infants by the supply of similar quantities of milk and similar protection from antibodies within the milk.

There is beginning to be research that aims at explaining ethnic differences in mortality levels, especially of children, within plural societies. Raharjo and Corner (1990) showed in West Sumatra higher levels of immunization of children among the migrant Javanese than the Acehnese not because of greater knowledge but because a longer period of association with health campaigns had led them to believe that it was more part of their way of life. Cantrelle and Locoh (1990) believed that the differentials in mortality rates between ethnic groups in Africa in a number of specific diseases could be shown to be largely behavioural and usually based upon theories of treatment. The Senegalese quarantined children with measles, thus raising the average age of infection and reducing mortality levels; the Yoruba attempted to cure smallpox by transporting afflicted persons from shrine to shrine, thus spreading the infection, a practice with parallels in India. Sushama (1990) found that matrilineality in Kerala ensured equal treatment for girls, thus lowering their mortality levels. Shariff (1990) identified the religiously imposed smoky kitchens as causing relatively high levels of respiratory problems among India's Hindus. Finerman (1990) identified some subgroups of Andean Indians in Ecuador as feeling so strongly about family autonomy that they often preferred to forgo medical treatment from persons or institutions outside the family. There were reflections of this in the attitudes to hospitalization among Australian aboriginals reported by Gray (1990). On the other hand, van Ginneken (1990) reported that continuing empirical studies in Africa are tending to show a lesser behavioural component in ethnic differences with regard to acute respiratory infection than had previously been believed. It is noteworthy that the research reported usually concentrated on specific disorders rather than on the more difficult, but almost certainly more important, beliefs and practices determining the nature and levels of general care.

The reported research on the impact of radicalism or democracy in societies went no further than Kerala. Sushama (1990) showed how increasing egalitarianism has meant that a greater proportion of the population receives adequate services in health centres, while Nag (1990) provided substantial documentation on how the awareness of rights leads to their achievement.

In *Selected Readings*, Khan et al. (1989) reported on villages in North India where the researchers regarded women as suffering from discrimination but where the local people denied it and said that women were merely leading the proper kind of life. No matter how the situation was described, the research showed that higher mortality among female than male children was at least partly explained by girls being weaned earlier, being taken to health centres only one-third as often as boys, and even then being taken at a later stage when the illness was more advanced. Significantly, it was among the higher castes where women are more secluded and where dowry is most burdensome that female mortality was highest both in childhood and adulthood.

At the Workshop, Basu (1990) reported research on a Delhi slum which contrasted the behaviour and child mortality of a North Indian community from Uttar Pradesh which restricts women's movements, and a community from Tamil Nadu where women have greater freedom. Basu was able to show significantly lower mortality among the Tamil Nadu children in spite of the Uttar Pradesh children being breastfed earlier and longer, having a better subsequent diet, experiencing similar levels of vaccination, being more frequently looked after by their mothers during the day, and being more likely to go to school. However, because of greater female freedom, Tamil Nadu women are more likely to go to a hospital for childbirth and are more likely to take their rubbish to the municipal tip, while their girls are more likely to use the public toilets instead of defaecating and urinating right outside the house. Basu thought that some of the differences were measurable and others were not, concluding: 'A cleaner and kinder physical environment, whether supplied by nature, the State or household behaviour itself, seems to have a more beneficial impact on child health and mortality than increased food or more doctors' (Basu 1990:558).

Selected Readings emphasized the ability of more assertive mothers to get treatment for their children when that assertiveness arose either from schooling in Bangladesh (Lindenbaum, Chakraborty & Elias 1989) or from a culture which allowed women more decision making (Caldwell et al. 1989). At the Workshop, Caldwell, Caldwell et al. (1990) reported that one reason why Sri Lankan child mortality is lower than that found in India is that Sri Lankan mothers are much more likely to assume responsibility themselves for taking sick children for treatment. Sushama (1990) reported that the matrilineal society of Kerala had always given such freedom to women and cited a 19th century report by Mateer (1883:209-210) that the Nayar woman 'regulates the lives of the children, decides what schools they shall attend, how they shall dress, and what medicines they shall take when they are ill' (Sushama 1990:785). Das Gupta (1990) reported from her study in North India that, in contrast, women are allowed least authority just when at the peak of childbearing, although she also found that education tends to level out the decline and increase of authority over the age span.

The Workshop demonstrated that little research has been done in the Third World on the relationship between lifestyle and mortality, partly, no doubt, because of continuing high mortality from disorders that are infectious or subject to medical treatment and partly because of a justifiable concentration on high infant and child mortality. One exception at the Workshop was a paper by Zimmet et al. arguing that a changing lifestyle and diet among Pacific Islanders has produced high levels of diabetes, hypertension, obesity and gout. It might be noted that changes occurring during the period when lifestyles and diets altered also propelled the region toward life expectancies around 70 years, although it is true that Nauru, with the highest per capita income in the Pacific, also has one of the lowest life expectancies. Taking lifestyle in an even broader sense, we might note that Aaby (1990) identified lower risks of death from measles in the less crowded conditions associated with monogamy, smaller residential compounds, nuclear family residence, separate bedrooms and beds, longer birth spacing, and lower birth rates.

The successful employment of health transition information to achieve successful health interventions clearly depends on much more research being done on the mechanics of change. This is difficult but not impossible, and adequate measures will have to be devised for the examination of both household care and interaction with the medical services. Popkin and Doan (1990) argued that one hopeful route might be through women's time allocation studies, which have rarely been used to look at this topic in spite of the fact that care, the seeking of treatment and child immunization are often decided within a time allocation framework.

The production of health

Health transition literature has placed an emphasis on the interaction between favourable social change and the right kind of modern medical intervention so as to produce the optimum health situation and the lowest mortality. The Workshop did not extend the comparison in *Selected Readings* by Caldwell (1989a) of societies which have achieved near-optimal mixes and those which have not.

However, several papers addressed themselves to the issue of whether traditional medicine helps or hinders the movement to lower mortality levels. In *Selected Readings*, Caldwell et al. (1989) argued that the issue was not merely the beliefs of the traditional system but the role it played in the society's life. In Sri Lanka traditional society had been dominated by a concern for illness and its treatment, and, while this sensitivity to illness seems to have done little in the past to produce unusually low levels of mortality, it was to do so in conjunction with modern medicine. At the Workshop, Sushama (1990) came to a similar conclusion with regard to Kerala which had possessed the most highly developed Ayurvedic system in India.

Most of the evidence in *Selected Readings* was that populations in developing countries see little opposition between traditional and modern medicine, but regard the latter as a further accretion of knowledge (Garenne & van de Walle 1989; Caldwell, Reddy & Caldwell 1989). Traditional doctors, perhaps especially in Asia, seem only too ready to dispense modern pharmaceuticals even if they provide different explanations for why they work. There is, of course, a problem of misapplication and another of underdosing or overdosing.

The real problems were set out in several papers at the Workshop and they are to do with underlying explanations and theories which affect other areas than curative treatment. Shariff (1990:788) discussed the Hindu view of life and why this is not always compatible with seeking treatment: 'suffering rather than seeking treatment is the way to obtain *Moksha* and purity; atonement rather than medication is the obvious choice of action'. It was widely reported that childhood infectious diseases are regarded either as sent by the gods, in which case it is impious to tamper with them, or as a necessary life-cycle event which must be accepted as a stage in maturation. In either case, there is resistance or lack of enthusiasm for such interventions as measles immunization (Visaria, Anandjiwala & Desai 1990). This is more serious when some types of diarrhoea are regarded as developmental disorders and left to run their course as among the Indonesian poor (Streatfield, Tampubolon & Surjadi 1990).

Raharjo and Corner (1990) argued convincingly from their research in Sumatra that, while there is little need to attack traditional explanations of illness in order to induce people to accept the best modern curative therapies, there is every need if preventive medical programs are to receive the necessary collaboration. There is little in traditional medicine that suggests that immunization programs will work. In India, traditional beliefs in pollution are often contrary to the types of pollution identified bacteriologically. Furthermore, it is thought that clear water does not need boiling before drinking (Shariff, 1990). Maddocks (1990) argued that in Papua New Guinea successful mother and child health centres are ones that attract women for social reasons and provide companionship, although, if these conditions are met, the mothers will tolerate health procedures even though they are sceptical of them.

Denoon (1990) argued convincingly that changing philosophies powerfully influence the direction and impact of modern medicine. In Papua New Guinea high levels of maternal mortality were regarded as natural by the Australian colonial medical service and even by the Director General of Health, a man who published anthropological papers on childbirth, until there was a decisive shift toward greater concern about the lot of women.

Perhaps because of its concentration on behaviour, the Workshop paid little attention to the kinds of health services which interact best with higher levels of education or women's independence. However, some papers threw interesting sidelights on successful programs. For instance, Visaria, Anandjiwala and Desai (1990) reported from a program in rural Gujarat, India that the inclusion of regular weighing of babies in the clinic services, although it did not make more food available, heightened mothers' sensitivity to baby care and needs and made them feel more responsible for what was happening.

One intriguing theme, first in *Selected Readings* (Cleland & van Ginneken 1989) and again at the Workshop (Cantrelle & Locoh 1990; Cleland 1990) is that education and health services partly substitute for each other. Near-saturation levels of health provision mean, in terms of child survival, that the level of maternal education is less important. As China improved its health services the child mortality differentials by maternal education consistently fell. Similarly, at very high levels of education, as in Cuba and Sri Lanka, the differentials are very modest. The economist might well enquire about the cheapest long-term mix of the two.

One paper at the Workshop stood out because it attempted a synthesis of total influence on health change in one area: LeVine and Dixon (1990) argued that in central Kenya child mortality had declined in the 1969-79 period because of both social and economic changes (even the rise in the number of blankets per person) interacting with improved preventive and curative health services.

Where are the advances?

The Workshop also had presented to it a range of analytical papers which discussed the nature of health transition. Most have not been mentioned here because this essay has concentrated on additions to knowledge achieved through field research. Around 20 papers can be classified in this way. Most achieved modest gains but together they show that most of the as yet unresolved areas of health transition probably can be illuminated. Most achieved their advances by means of a mixture of anthropological and quantitative methods, and most concentrated on a small part of a single society. Indeed, the workshop might have benefited from a few more quantitative international comparisons and even some drawing on cultural studies.

Advances are clearly being made in studies of the most mortality-prone families and societies. We need to know whether our failure to identify these from our existing socio-economic measures means that such behaviour is not predictable or merely that there are other measures that might be employed.

The research on women's education and women's cultural independence, and possibly that on radical societies, all needs to be tied together into a single theme. It is likely that this theme will prove to be the rise of individualism and of a scientific culture as agrarian family subsistence production gives way to market production. Yet it is clear that the situation of women is vastly different in some premodern cultures from what it is in others and that these differences portend very different health levels once health transition begins.

Two limitations are common to both *Selected Readings* and the Workshop. The first is that most of the research, and certainly most of the convincing work has concentrated on mortality rather than health. Health raises problems both of concept and measurement. Clearly much more effort will have to go into the study of ill-health although the finality of death means that the concentration on it has not been inappropriate.

The second problem is that the overwhelming number of studies focuses on infant and child mortality, usually restricted to deaths occurring under five years of age. This is appropriate for very high-mortality societies where 60 per cent of all deaths may occur at this age (although perhaps only 40 per cent of the deaths of a cohort) but many Third World societies have now reached the stage where only 40 per cent of annual deaths (and 10-15 per cent of cohort deaths) are at this age. Behavioural factors may prove to be even more important in deciding deaths at middle and older ages. To enter this field we need advances in technical demography which will allow better estimates of adult mortality in societies without registration systems.

Where do we go from here?

None of the reported research suggests other than that the best health outcomes are the product of parallel advances in social change and the provision of modern health services. Furthermore, the evidence appears clear that the most effective health services are also the most democratic in that they are easy of access in all parts of the country and to every social group while not imposing high-cost barriers. Health transition research has to build upon the best prototypes and there is an urgent need to produce good models of systematic research both to provide evidence and also to allow strictly comparable studies. This journal might help toward this end.

Health transition research has several justifications. It is important in its own right and in its contribution to our understanding of the world and how we see ourselves and others. It should prove valuable for policy purposes, especially for indicating governmental interventions that will change behaviour and society in such ways as benefit health. It may prove that the major impact of such research on health is through the spread of knowledge from scientific journals to the media and on to individuals that some kinds of behaviour endanger their health and that of their children to a greater extent than does other behaviour.

Finally, health transition research may be one input into the debate about what aspects of societies and cultures must be rejected, or modified, or employed in a different way, or enhanced. Cultures, societies and individual lifestyles have many more products and aims than their health outcomes, but knowledge of what are likely health outcomes should be part of the data banks which guide decisions.

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