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HEALTH TRANSITION: THE CULTURAL, SOCIAL AND BEHAVIOURAL DETERMINANTS OF HEALTH IN THE THIRD WORLD

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Abstract—The paper defines 'health transition' and outlines the development of recent research programmes. Evidence is reviewed as to the cultural, social and behavioural determinants of health in the Third World, and the extent to which they interact with the provision of health services in reducing mortality. Specific attention is given to the impact on mortality of education, and the historic experience of the now developed countries is compared with contemporary developing countries. Consideration is also given to the role of cultural factors and to radicalism, egalitarianism and the role of women in traditional society as well as fertility control and various forms of deleterious behaviour in contemporary society. The extent to which all these changes are facets of a single social transformation is discussed. Finally, the future of health transition research and its value for planned health interventions are summarized.

Key words—health transition, epidemiologic transition, health, mortality, education, culture, society, behaviour, health interventions

INTRODUCTION

The fact that the term *health transition* is employed to mean 'the cultural, social and behavioural determinants of health' (i.e. those determinants other than medical intervention and the material standard of living) is not obvious from its constituent words. It was chosen for a Rockfeller Foundation exploratory programme because the words were simpler than those in the 'epidemiologic transition', implied that the major concern was with health and survival rather than death, and suggested continuing change. It has since been employed in the title of a journal [1], conferences and resulting books [2–4] as well as a range of articles [5, 6], and researchers have now shown that the term was employed almost 20 years ago [6].

The notion that behaviour and lifestyle could play a major role in determining health and the risk of death is not new. In terms of saving one's own life, it is central to the concern of the *new public health* movement with smoking, drinking, eating and exercise; in terms of protecting one's children it was the driving force of the *infant welfare* movements in many Western countries in the early decades of the present century. It is the single most important reason for the existence of *Social Science and Medicine*. Nevertheless, whole societies were not usually looked upon in the same way. There was a tendency to regard their health, or at least their mortality levels, as largely being a product of the levels of medical interventions and material well-being, the latter both determining in aggregate how much of the former could be afforded and at the individual or family level the provision of food, clothing and shelter. This attitude had been reinforced by the writings of Thomas McKeown which identified changes in medical science and living standards as the only possible contenders for reducing British mortality and pointed to the latter, especially better nutrition, as having been the principal force until well into the present century [7–11]. These conclusions have been damagingly attacked by Simon Szreter [12], who once again drew attention to public health activities, especially at the level of local government, but had little to say about broader social and behavioural change.

The evidence that there may be additional factors to those comprising, on one hand, medical and public health interventions, and on the other, per capita incomes, has come largely from comparative studies of the contemporary Third World. Such studies have been made possible by the steady improvement in the data banks of the international agencies, and interest was focused on them by the 1978 Alma Ata Conference's declaration that there should be good health for all by the year 2000. It became immediately clear that some countries were more likely to achieve that goal than others. To cite the more extreme examples from current national statistics [13, 14]; Sri Lanka, China and Vietnam, with per capita incomes in the U.S.$330–420 range, have life expectancies between 66 and 71 years, while Saudi Arabia, Libya, Oman and Iraq exhibit life expentancies of 61–64 years although the per capita incomes of the first three are all over $5000 and Iraq's is over $2500. The explanation is not that the first group of countries achieves its relative success by a greater concentration

on health services, as is shown by a comparison of those countries in this group which release the appropriate statistics: in 1988 Sri Lanka spent 1.7% of its GNP or $7 per head on health and provided one doctor per 5520 persons in order to achieve a life expectancy of 71 years, while Iraq spent 4.6 % of its GNP or $123 per head and provided one doctor per 1740 persons to achieve a life expectancy of 64 years. Indeed Saudi Arabia and Libya had one doctor for every 690 persons, approximately the same density as Japan or Ireland, but reached life expectancies of only 64 and 61 years respectively. Ireland's per capita income was only marginally above Saudi Arabia's and its ratio of doctors to population almost the same, while its life expectancy was 10 years greater and its infant mortality one-tenth as high.

A conference, organized in 1985 by the Rockefeller Foundation, sought to learn the secret of those societies which had, in the words of the title of their report, achieved *Good Health at Low Cost* [15]. Delegates were invited from the Indian state of Kerala, probably the greatest success story of all (most recent per capita income estimate at that time $160–270, according to source, and life expectancy 66 years), Sri Lanka ($320; 69 years), Costa Rica ($1430; 74 years), China ($310; 67 years), Vietnam ($170; 64 years) and Cuba ($2240; 75 years) [16, 17], but only the first four came and reported. The organizers concluded that success had been achieved by the exercise of 'political will' by China and by both 'political and social will' by Kerala, Sri Lanka and Costa Rica. The conference delegates placed a good deal of emphasis on comprehensive and accessible health programmes with community involvement and the importance of education, especially female schooling. They recommended that other countries should attempt to move in the same direction, and should also guarantee adequate nutrition.

A further analysis by Caldwell of these and other data identified eleven countries (plus Kerala) with health achievements far beyond what would be predicted by per capita incomes (in descending order of success, Kerala, Sri Lanka, China, Burma, Jamaica, India, Zaire, Tanzania, Kenya, Costa Rica, Ghana and Thailand –omitting Vietnam and Cuba because of inadequate data), averaging a per capita income of $501, life expectancy of 61 years and infant mortality of 64 per thousand births; and, in contrast, another eleven countries that did far worse (in order from the poorest performance, Oman, Saudi Arabia, Iran, Libya, Algeria, Iraq, Yemen A. R., Morocco, Ivory Coast, Senegal and Sierra Leone), averaging a per capita income of $4462, life expectancy of 51 years, and infant mortality of 124 per thousand births [18]. This study showed the strongest correlation with health success to be the educational levels of women of maternal age, followed closely by the practice of family planning and the education of men, and more distantly by the density of doctors and nutritional levels, while there was weak correlation with per capita income.

The study looked for antecedent causes and decided that the most successful of the non-communist societies had been, in a sense, prisoners of their own histories with a demand for health services and education, especially the all-important schooling of girls, arising from the long-existing nature of the societies, particularly the independence of their women, an egalitarian-radical-democratic tradition, and often a belief in enlightenment which was easily translated into a demand for education. Onto this were fused modern health and family planning services. The study argued that all these favourable social characteristics were of little avail until modern health services were available, as was shown by life expectancies around 1930 of 30 years in Kerala and 38 years in Sri Lanka in spite of far greater female independence and higher educational levels than found elsewhere in the South Asian region. When health services arrived here and elsewhere mortality fell steeply because of a symbiotic relationship between an educated independent population determined to use them and make them work, and readily available health services. The effective health services were not the technologically most advanced, but the democratic ones that provided free or inexpensive services close to where the urban and rural poor lived. They were most effective when an egalitarian society assumed that there would be equal service for all and when grass-roots radicalism put pressure on the health providers to be present and efficient and on the health system to keep up the supply of drugs, equipment and personnel. Educated women insisted within their families and the health system that their children be treated promptly and efficiently. With attention turning more towards awarding children higher priority within the family there was a demand for contraception, and, as family size was limited, for better health and survival chances for the smaller families. In the West, the steepest falls in infant mortality date from only the beginning of the present century, clearly a consequence rather than a precursor of fertility decline, but probably also a reflection that the mothers involved included the first generation of working class women who had all been to school [19]. I argued that, though the steep mortality declines in the countries closest to good health for all had been the fortuitous outcome of a larger historical drama, there were almost certainly lessons which could be transferred to planned development programmes, and that it was the task of health transition research to explore the mechanics whereby good health was achieved in poor countries and to suggest interventions in other countries based on this knowledge. The exploratory health transition programme attempted to further such knowledge by publishing a book of selected readings [20] and promoting research workshops.

Some avenues of research into the social and behavioural determinants of survival were already comparatively well developed.

DIFFERENTIALS IN CHILD SURVIVAL

Levels and differentials in child survival demonstrate the impact of parental or social behaviour whether as a result of conscious discrimination or of less intentional assumptions of priorities with regard to adults vs children or boys vs girls. The Brass system of life tables [21] is characterized by weighting factors gauging the relative adult and child mortality levels at the same overall life expectancies, and such differences between societies have also necessitated the production of a number of different families of life tables by researchers and organizations developing systems of model life tables [22, 23]. In some circumstances this need may reflect different patterns of disease, but almost certainly the main reason is that differences in attitudes to the relative importance of the old and the young result in contrasting distributions between them of family resources and care. Hill and colleagues identified neighbouring societies in the West African savannah with similar levels of adult mortality but very great differences in child survival, which, upon further research, they concluded demonstrated contrasting social priorities and philosophies and markedly different levels of child care [24].

Most research demonstrating the differential impact of parental behaviour and care upon child survival has focused on sex differentials in mortality, which exhibited marked geographical, and hence cultural, patterns. The World Fertility Survey (WFS) demonstrated that the age range most affected by differences in parental care was 1–4 years of age, presumably because infants of both sexes receive similar nutrition and protective antibodies from their mothers' milk, while beyond that age children are assuming part of the responsibility for looking after themselves. At this most sensitive age, WFS found in the countries it surveyed, excess female mortality in all of North Africa and the Middle East with the exception of Tunisia, all South Asia, all East and Southeast Asia with the exceptions of Indonesia and Malaysia, and in much of mainland Central America and northern South America, but almost nowhere in Sub-Saharan Africa [25, 26]. The position of women compared with that of men is better south of the Sahara and in the Malay Peninsula and Archipelago than in the ancient peasant societies of the Mediterranean, and its transplants in Latin America, and of South and East Asia, and this is reflected in the greater relative survival chances of small girls. In mainland South Asia there are two humps of excess female mortality in the age range, the first from under one year of age to at least ten years, reflecting differential parental care, and the second from 15 to 34 years, wholly explained by maternal mortality [27] but doubtless, even in this, reflecting a lower priority for women's than men's needs. Just how child-sex differentials in parental attitudes, behaviour and care result in so many more girls dying has been inadequately researched, partly because of very real observational and measurement difficulties. The best effort was probably that of Chen and colleagues in the Matlab District of Bangladesh where they could work with the assistance of the Demographic Surveillance System (DSS) of the International Centre for Diarrhoeal Disease Research (ICDDR,B) [28, 29]. They showed that females, both girls and adult women, receive less food than males, but doubted whether the margin was greater than relative need. They reported that girls were less likely to be brought to the diarrhoeal treatment centres for attention, implying that parents were less likely for daughters than for sons to employ family resources to get medical treatment of any kind. The researchers were unable to monitor the kind of household care that prevents sickness or accidents in the first place or ensures recovery without outside treatment. Recently, a study of the DSS data of ICDDR,B has shown much higher survival levels for the first two sons and the first daughter than for subsequent children [30], thus establishing just how selective parents' behaviour can be in determining child survival. This may not always take the form of choosing between children. In a patriarchal, patrilocal society, a woman's place in her husband's family's home depends on the survival of her first children, who have almost unchallenged claim to her attention and a considerable claim on household resources. With a typical birth interval of three years, the elder sibling is 3 years old by the time a younger sibling expands the size of the household and the competition for resources, and at that age and with the mortality regime typifying rural Bangladesh, almost 80% of the mortality risk between birth and the end of the childhood at 15 years of age has already been passed. If we pictured all the children in the family being subject to a model life table mortality level one step down (i.e. with a lower life expectancy) with the addition of each child, then each successive child would have a smaller chance of surviving adulthood. In Sierra Leone, an African society with both polygynous and unstable marriage, Bledsoe found that resources were more likely to be concentrated on the child of the present union than the child of only one of the spouses, as a measure to protect the union, and, between the mother's children by different men, then the resources devoted to the child are likely to reflect those available to the father [31].

Little work has been done on Third World adult mortality by the individual's own characteristics, but we do have some information for industrialized countries. We know that the mortality of males of working age in Europe falls with duration of

education and that this probably reflects a conscious control of one's fate. We also know that single, widowed or divorced men have much higher mortality than married men of the same age, reflecting perhaps different ways of life and levels of household care, while there is not a similar situation with regard to women [32, 33].

THE IMPACT OF EDUCATION

The chief stimulus to health transition programmes has undoubtedly been the demonstration of major differentials in the survival of children by the education of their mothers, persisting after controlling for household income and the availability of health services [18, 34–40]. Massive corroborative research has made this finding one of the most certain in the social sciences. A United Nations study of 15 developing countries concluded that

> an additional year of mother's schooling reduces child mortality by ... 6.8% .... After all other variables are entered into the estimation equation, the effect is still a reduction of 3.4% in mortality per year of schooling. This latter is the 'direct' effect of schooling and is biased downward as an estimate of the 'total' effect by the inclusion of variables whose value is partly determined by mother's schooling itself [37].

Cleland came to a similar conclusion and showed that these effects were found around the Third World, with the situation in China being similar to that in market economies [40].

Two additional points should be made. The first is that even these documented massive effects of maternal education understate its impact because they are based solely on differentials within countries. In fact, the education of women has almost as powerful an effect on whole societies in improving child survival at every level of mothers' education, while retaining the differentials by maternal education [41]. The product of these two factors means vast differences in children's survival chances. In Asia, for instance, the mortality of children among uneducated Nepalese women is almost 15 times greater than it is among Malaysian women with seven or more years of schooling. I concluded from an examination of Third World experience that "There is little doubt that mortality levels close to those of the industrialized countries can be achieved within two decades if nearly all children are educated through elementary school" [41]. The second point is that the extraordinary impact of maternal education has tended to obscure the fact that father's education, even when controlled for income, also strongly influences child survival, in some countries equalling or exceeding the influence of mother's education. The reason for the lesser emphasis on this point is a suspicion that it is more difficult to remove all economic effects in the case of fathers, and hence a feeling that the maternal effect is closer to being a pure social or behavioural one.

For health transition, the important questions are how and why education achieves this impact. One way to answer these questions is to try to discover different behaviour patterns, especially patterns of child care, among women of varying education levels. This can be more easily measured by their actions outside the home than by the care given within it. However, in an African village far removed from any access to modern health services it was found that only half as many children died when their mothers had been to school, even though it was mostly elementary schooling, than when they had not [34]. A study in rural south India showed that young mothers who had been to school were more likely to demand of their husbands and mothers-in-law that a sick child be treated, and more likely to use modern medical facilities in the form of the health centre: spend a longer time with the doctor explaining the problem and listening to his instructions, were more likely subsequently to follow those instructions, and were much more likely to report back to the health centre if the patient was not recovering [42]. However, even educated women were still far less likely to act solely on their own initiative, in rushing a sick child for treatment without waiting until their husbands could be contacted and consulted, than were Sri Lankan women [43], a measure of greater female autonomy in the latter society, as well as higher educational levels, a greater concern in the culture for illness and its cure, and a degree of conditioning to the attitudes of the household health visitors.

In the Indian research the sequences of events identified three areas of critical importance. The first is that the educated mother often assumed that it was only natural that she should take the sick child to the health centre. She regarded herself as that type of person and saw the centre as part of the whole complex of the modern world, which included India's independence, five-year development plans, and her school. She felt she was welcome in this non-traditional world, in contrast to illiterate mothers who were often sure that they were not. Lindenbaum and colleagues found in rural Bangladesh that educated mothers behaved in a way that gave greater protection to their family's health, and also allowed them to discuss these matters with their husbands, less because they deduced such behaviour from specific health instruction than because school children were enveloped in a whole new way of life that the school and society expected of them [39]. The second area of importance is the time mothers spend discussing the child's sickness with the doctor, which is almost directly proportional to their years of schooling. This is not so much a snobbish response from the physician as a feeling that he can learn something from the literate woman's account and that she is likely to understand what he has to say and act upon it. But it does mean that the uneducated woman and her sick child get very much less out of

the visit than does the educated woman, often just what she anticipated with her feeling that there is no easy entrance to the modern world. The third area is the illiterate mother's failure to report the lack of success of the prescribed treatment, which was partly because she believed this was tantamount to telling an educated and often high-caste professional man that he was wrong and partly because she believed that she might have erred in following the treatment instructions and feared the accusation. Her failure was also conditioned by the traditional Ayurvedic health system which teaches that the practitioner immediately recognizes an ailment and prescribes the best known remedy; there is no probabilistic element, no learning from initial lack of success, and no follow-up treatments that might prove to be better.

The area of greatest uncertainty in research on the relation between parental education and child survival is the extent to which the impact is achieved by preventing the child from needing medical treatment or alternatively by interacting more competently with modern health services. Surprisingly, some of the research suggests that nearly all the explanation lies in the latter category.

Further valuable light has unexpectedly been thrown on the contemporary Third World health transition by Western historical demography. When Preston and his colleagues located and began to process and analyse the United States 1900 and 1910 census schedules, which recorded parental literacy and child survival, it was anticipated by most of us that the analyses would reveal the wide differentials by parental education in the survival of children that characterize the contemporary Third World [44–46]. In fact, they do not. The analysis of the 1900 census shows child survival in the last decade of the nineteenth century to be largely determined by race and residence (higher survival levels among whites and outside the cities) and by a complex of economic factors: whether the father was employed, whether he was a farmer rather than a labourer, whether the family owned their own home and whether they did not need to take in boarders [46]. Preston and Haines conclude that, in explaining differentials in child mortality, they can

> generate a contrast between rich and poor of 69%. Economic discrepancies are clearly associated with large variation in child mortality, although no single economic variable shows striking effects by itself . . . The variables that do not appear to be very important in child mortality, individually or as a group, are those which we expect to be most closely associated with child-care practices: mother's literacy, her ethnicity, her English-speaking ability, and her husband's occupation. None of these variations significantly explains variation at a 5% level . . . once other variables are controlled. Whatever behavioral variation was associated with these variables seems to be swamped in its effects by broad geographic and economic factors . . . [the analysis] paints individuals as relatively passive victims of time, place and labor markets . . . One reason may be that too little knowledge of specific ways to enhance child survival had developed to allow individuals to escape from the circumstances imposed by broader geographic and economic forces [46, pp. 75–76].

It might be noted that this last observation suggests that it was not the general level of care in the household that was important but knowledge of specific innovational strategies.

Ewbank and Preston have been able to compare child survival in the 1890s (employing retrospective data from the 1900 census) with that in the 1900s (employing the 1910 census), and that in the late 1910s and the first half of the 1920s (employing 1923–29 data from the U.S. Birth Registration Area) [45]. They were restricted by the limitations of the BRA data to father's occupation, but this should reflect parental education. These data do not show a widening in child mortality differentials by father's occupation between the 1900 and 1910 censuses, but they appear to demonstrate a widening by the 1920s. Certainly, the children of physicians, dentists, veterinarians, lawyers and judges were doing relatively better than most other children. It should be noted that the BRA data may not be strictly comparable with the census data. Nor can they be controlled by all those other factors, which when applied to the 1900 census data by Preston and Haines rendered fathers' occupation of little importance when explaining child survival differentials.

What is probably important is the Preston–Haines and Ewbank–Preston demonstration that the survival differential between the children of literate and illiterate mothers was small in the United States in the 1890s. The finding is not completely convincing because even in 1900 only 5% of the native white women were illiterate, and there were probably strong regional differences. Preston found supporting evidence for his case from a 1915 study of Baltimore [44, 47], where the literacy of mother made little difference to child survival once father's income was controlled, and from the fact that the larger study of eight American cities [48], of which the Baltimore study was a component, apparently found literacy to be of so little interest that they did not publish the findings in this regard [44]. Preston has pointed out that child survival differentials by mother's literacy and father's occupation were much smaller in the 1900 census than in most contemporary Third World surveys [44, 46]. In a study of rural south India the occupational differential in child mortality did not survive controlling for mother's education, while the educational differential remained very wide after controlling for father's occupation [49].

Preston and colleagues explain the decline in mortality by the increase in health knowledge, by which Preston means

> the accumulated body of information about disease etiology and especially about how human intervention can reduce the incidence and fatality of diseases. This knowledge base is available to physicians, public health authorities, government leaders and individuals. 'Medical knowledge'

is too narrow because of the modern implication that it resides exclusively in the domain of the specialist. 'Technique' is also too narrow because some of the important knowledge was of a social/organizational nature, e.g. how health departments can organize to improve milk supplies [50].

Preston explains the perceived increasing occupational or literacy differential by the greater ability of the better-off and better educated to acquire this knowledge in order to govern their own behaviour and the assistance they seek from professionals, and to command resources to allow the professionals to employ their knowledge.

I do not dispute these definitions nor the interpretation, but I do not think they go far enough to explain exactly what happened in the United States and certainly not far enough to explain the very broad differentials in child survival by parental education in the Third World. Yet it is the Preston evidence which suggests the explanation.

It is not merely the totality of biomedical knowledge and its availability through the health system that determines child (or adult) survival, nor is it the knowledge available to individuals or even possessed by them. It is also the belief of the populace that this is the correct knowledge and that they can or should collaborate with it to reduce mortality. To a considerable extent it is the intensity with which they feel that the knowledge should be used and that they themselves have a responsibility for acting.

An Australian examination of health and fertility issues suggests that the population in the late nineteenth century very largely believed in modern medicine and thought that, in the case of sickness, they should employ it for themselves, their spouses, their children and any other dependent relatives insofar as they had access to medical services and the means to employ them [51]. The last is an important qualification, for doctors' fees were high in comparison to working-class wages. There was a fairly widespread agreement crossing class boundaries that children should be looked after at home when sick, although it is true that children were often treated in a rough and ready way by today's standards [52]. This situation was probably very similar to that obtaining in the United States. The better-off and more educated could certainly afford to buy more health services, but what rendered this largely ineffective, and kept the occupation and educational mortality differentials small, was the poor armoury against disease that the medical profession possessed. Preston and Haines argue that the armoury was not quite as poor as the way it was used [46], but the lags and inefficiency in applying new knowledge were probably no greater than one would expect in a poorer and less educated society than contemporary America and one with a much less developed infrastructure for testing and applying new health or medical breakthroughs. Indeed, in these circumstances some caution and some scepticism might have been a sensible approach. Subsequently, the occupational, and probably educational, differentials in child survival widened to a moderate extent, as Ewbank and Preston have shown [45]. This probably arose from two changes. First, the health system had more to offer both in preventive and curative terms, provided, in the latter case, that the family could pay for it. Second, with rising educational levels and also further technological progress, the orientation of the society towards science and towards cooperating with scientific medicine and adapting behaviour in terms of new scientific knowledge probably intensified.

Nevertheless, the socioeconomic differentials in child survival (or probably adult survival) found in the West, either now or a century ago, do not rival those existing in the contemporary Third World. This is not because the Third World is relatively far advanced in personal attitudes or knowledge from the situation identified by the 1900 U.S. census where there was "some combination of ignorance about personal health and ignorance about what public institutions could accomplish in the area of health", so that one could state of the Third World or even of its town dwellers: "That this ignorance has largely disappeared is vividly suggested by the fact that urban residents in developing countries no longer suffer the excessive mortality that their dense living arrangements would otherwise foster" [44].

The fact that some Third World countries and more of their urban populations have impressively low mortality arises from the fact that global biomedical science is far more advanced than it was at the beginning of the present century. The gap between what it could potentially do and what it does is probably at least as great, and usually greater, in today's developing countries than in America at the turn of the century. The reasons are the same: people do not know everything that could be done and neither do their politicians, and, in any case, both have competing priorities for their time and money.

It is important not to confuse the mortality levels reached with the socioeconomic differentials in levels. These arise for a different reason, one that is important in understanding the Third World health transition and in developing interventions to speed that transition [53]. Biomedical science developed in the West as part of the gradual evolution of science and technology which in its more advanced form became known as the Industrial Revolution. There was little suspicion of it and only minimal attempts to offer alternative non-scientific explanations for disease or other phenomena. In many ways there was probably more faith in the late nineteenth century medical profession than the facts warranted. The Western version of the Christian religion had subtly changed with the society, and, at times, as with the rise of Puritanism, had consciously eliminated most beliefs in magic in the society. The development of Western industrial, secular, urbanizing society, the related

development of its education system, and probably its underlying religious philosophies, increasingly carried the message of individual control over events and the need to take responsibility for one's own health and that of one's dependants. Simons has explored *locus of control* theory in terms of health with clear implications of cultural differences [54].

In much of the Third World modern medicine has been imported into societies with very different belief systems and attitudes. Those systems frequently incorporate alternative explanations for illness, or the belief that an additional non-biomedical causation is needed as well as the pathogen. Caldwell, Orubuloye and Caldwell have explored this issue in terms of the Sub-Saharan African AIDS epidemic [55]. Many of the cultures place emphasis on the locus of decision-making lying elsewhere in the family or beyond human control in that the future is already largely decided.

The impact of modern medicine in Third World societies can be very modest. It can, however, be spectacular if it is accompanied by modern education. The reason is that modern education around the world is essentially Western education, and it carries a powerful Western pro-science message [56, 57]. Many governments develop their educational systems precisely because of its modernizing, pro-development message. This not very hidden agenda teaches directly and by implication that the scientific explanation for ill-health is the right one, that cure can be effected by modern health services and pharmaceuticals, that it is blameworthy not to take early action to treat illness, and that going to health services is akin in many ways to going to school. It is to a very considerable extent a deculturating experience and the major step in creating a global society and a global economy. Modern education does not merely provide knowledge but it teaches that one should implement knowledge learnt both in the school and also later from other reliable—or modern—sources. It teaches that modern health instruction should be sought, listened to, and followed, and also that failure of the treatment should be reported back.

Thus the road to good health for all, flagged by the discoveries about the strong association between survival and both modern education and the early availability of modern health services, is undoubtedly the provision of both education, especially for girls in that they will determine both their own health and that of their children, and basic health services available egalitarianly to all. Several other conclusions follow. If educational services work in the health area by making people feel that the educational services are theirs and should be used and trusted, then the Alma Ata emphasis on community control is not misplaced. If educational services work less by the substance they teach than the attitudes they impart, then mass or adult literacy campaigns may have very little impact on health unless they not only carry other messages as well but also incorporate action campaigns and promote activities in the health area. If educational services work by making people feel responsibility for taking action and even a desire to seize the chance to do so, then we are identifying another facet of the same phenomenon that allies better health with greater female autonomy or intense grass-roots radicalism; or indeed of the solvent offered by the monetization of the economy, the development of the market, or the displacement of familial by capitalist production, for the transition from traditional to more individualistic behaviour. If education works by riding roughshod over traditional views and behaviour, then revolutions may well have the same effect, and this goes some way towards explaining China's reduction of mortality in the 1950s. In spite of the high level of education and female autonomy in Sri Lanka, it took the political turbulence of the late 1950s, which had no specific health or women's rights agenda, to reduce female mortality levels below those of males.

CULTURE AND ETHNICITY

This discussion also implies that there may be major cultural differentials in health reflecting the strength of alternative beliefs in disease causation, beliefs in science, and allocation of responsibility to individuals for action. This has long been suspected, but it was given a more scientific basis by studies carried out by Butz, DaVanzo and Habicht for the Rand Corporation [58] and by Mensch, Lentzner and Preston for the United Nations [37]. The former study focused on Malaysia's plural society where it was discovered that controlling by a range of socio-economic and biological factors failed to eliminate quite substantial differences in the survival chances of Chinese, Indian and Malay babies.

The United Nations study focused on 15 countries in Africa, Asia and Latin America, employing World Fertility Survey data for seven of them and other census and survey sources for the remainder. For eleven of these countries there were ethnic contrasts and ethnicity was identifiable. The study showed that, once controlled for other variables, ethnicity was the only factor other than parental education where large child mortality differentials persisted. In seven of the eleven countries child mortality in one ethnic group remained at least 50% greater than in a contrasting ethnic group of the same country. This was attributed to differences in child care; which leaves unanswered both a set of questions as to whether it is largely care within the household or interaction with the health system, and another set of questions as to what aspects of the cultural assumptions condition this care, and whether there are differences in the priorities given to adults and children respectively, or to health and caution more generally compared with other lifestyle priorities.

Whatever the answers to these questions, it is clear that the findings support the view that not all societies are based on the same assumptions as are those of the West and that it is modern education, laden with Western cultural assumptions, that causes convergence. Significantly, the study found that the cultural differentials in child survival were reduced by parental education and by urbanization.

Religion also underlay differences in child survival but was, in many cases, difficult to distinguish from ethnicity. In any case the differentials were more easily reduced by controlling for other socioeconomic factors, although some contrasts between Muslim and non-Muslim populations remained, probably reflecting different attitudes to priorities within the family.

OTHER FACTORS

There are other factors in health transition which are more difficult to measure but which are nonetheless very real. Kerala provides the archetypal example, but similar elements can be shown in the case of all societies that perform particularly well in health terms relative to their incomes. A radical, egalitarian, individualistic and democratic element — these are not all quite the same thing, and different societies exhibit different emphases — brings down mortality in at least five ways. There is a stronger feeling of individual responsibility in making decisions of all kinds including treatment decisions. There is more chance that a person will be allowed to take individual action. As representative political institutions developed, they quickly expressed a grass-roots demand for more and better health and educational services. Once the health services were in place, local pressure made sure that adequate services were provided and that everyone knew that it was their right to employ those services. At every level, egalitarianism created a sympathy for the underprivileged and weak, especially the poor, but often children and women as well. Mosley has shown that hierarchical local social structures often prevent health services, even when they are established, from providing universal services; and Okediji demonstrated that even in egalitarian societies the middle class could monopolize public health provision [59, 60], thus raising worrying political questions about how real community control of health services can be achieved in many societies. It might be noted that community radicalism is likely to precede radical governments rather than the other way round and to have a greater impact on health, a point which Nag has substantiated by comparing Kerala with West Bengal [61].

A distinct but related strand is that of the position of women. Alone in south Asia, women in Kerala and Sri Lanka have long possessed a great deal of independence and rights over treatment decisions for themselves and their children. In Kerala this arose from matriliny and a great deal of female sexual freedom in the major castes which affected the whole society. European observers in the nineteenth century noted how women made treatment decisions [62, 63]. In Sri Lanka, the situation was more complex and included elements of polyandry [64], but accounts dating back to the seventeenth century stress the freedom of women [65].

Family Planning also is related to health transition in a multifaceted way. Its early adoption may well indicate that children are already becoming relatively expensive as a result of family resources being moved from the old to the young [57]. One manifestation of this process, which speeds up the increasing cost of children by imposing specific expenditures and at least partly removing them from the workforce, is the expansion of the educational system. The early spread of family planning may show the relative freedom of women in that there is no obsessive need felt to keep them in the household with reproduction as their central role. There are also secondary effects. If the society is not overweeningly concerned with the sexual purity of its women, it is more likely to permit girls to go to school and even to stay there when they reach puberty, which in turn will inevitably transfer more family resources towards children and ultimately towards wives. Once family size declines, there is an added incentive to ensure the survival of children. Infant welfare movements in the West at the turn of the present century frequently cited the national fertility decline as a reason for their need, and individual parents both then and in the contemporary Third World exert themselves to a greater extent with at least some success to reduce the risk of death in small families [66].

Researchers have given renewed attention to mortality-prone households, for even in high-mortality populations an extraordinary proportion of all deaths occurs in a relatively small fraction of households [67]. To some extent this may be a product of infectious disease or biological differences, but probably most of the explanation lies in different levels of family care or interaction with the health system. The underlying factors have not been properly identified but it is likely that they embrace many of the societal factors already discussed in this article. There is evidence that they are likely to be households where women have little education, but it is probable that they are also often more patriarchal families and ones where women and children are allocated relatively few resources.

Some research has recently been carried out as part of a health transition programme in Nigeria on household problems of a very different kind [68]. In West Africa, partly because of the strength of descent lineages and partly because of the high levels of polygyny, the typical pattern is for women and men to have separate budgets and separate responsibilities. Thus, women are completely free to make treatment decisions with regard to their children,

providing they can meet the cost from their own resources. The children's fathers will meet the cost only if they make the treatment decisions and this may well occur only after dangerous delays, involving some suspicion of each other's motives and some bluff.

Most research of a health transition type in richer countries is carried out on individual behaviour, where the focus is on such matters as smoking, drinking alcohol, taking drugs, overeating or insufficiently exercising. The reason that this is not the case in most developing countries is the continued prevalence of mortality from infectious disease and the relatively easier gains that can still be made in this area. Yet this view may well underestimate the proportion of all Third World deaths for which the ultimate cause is alcohol, smoking, drugs, betel chewing or violence, the latter often related to one or more of the other practices. The area where there is now some convergence between First and Third World research is that on sexual behaviour and safe sex because of the spread of the AIDS epidemic.

FUTURE DIRECTIONS

Much health transition research has been carried out by examining mortality differentials or contrasting health behaviour in a single society. This is unfortunate for two reasons. First, much of the cultural impact on health can only be appreciated by comparing the cultures of different countries. It is insufficient, and often misleading, to confine our attention to the different cultures in a single country characterized by a plural society. For instance, contrasts between Sri Lanka's Sinhalese and Sri Lankan Tamil populations often underestimate the extent to which both are affected by common Sri Lankan traditions, and fail to perceive the cultural gap between the Sri Lankan Tamil areas and those of Tamil Nadu in India (ignoring the even greater complexities of Sri Lanka's so-called Indian Tamils on the tea estates, who are the heirs to cultural traditions from two countries). Secondly, the failure to compare countries may result in an undervaluation of the impact of interventions. A substantial increase in national investment in education would probably have close to twice the impact on mortality than is estimated by studying national differentials, in that it would not only move a greater proportion of the population into higher educational categories but at the same time raise the education level of the whole community so that even the uneducated would feel new forces impinging on them.

Health transition research discusses health but its specific investigations and statistical proofs still deal very largely with mortality. This is mainly because health and ill-health are difficult to measure, especially in the Third World, and because death has specificity and a finality which both suits research strategies well and has a deep social significance.

The growing realization that many of the influences for lower fertility are interrelated makes research more complicated but research-based interventions easier. In spite of these interactions, the research agenda must continue, as in all branches of research, to isolate individual aspects such as maternal education, culture or the position of women, so that mechanisms can be demonstrated more certainly and influences measured more exactly. It will also be necessary to attempt to identify other aspects of society which influence mortality. At the same time it will be necessary to examine the picture as a whole to determine just how these different aspects of societies are facets of a common social influence on mortality.

It is this substitutability that makes intervention possible. If the position of women cannot be changed by exhortation or by modifying religion, then it may be changed by allocating more resources to the education of girls and the employment of women. If society cannot be radicalized, then community health services may be made to work by institutionalizing community control with some kind of guaranteed representation of all sectors of the community in the control mechanism. If the society is too inegalitarian or has too great a social gulf between the illiterate and the educated for doctors spontaneously to provide each with equal attention, then this may be achieved by changes in the atmosphere in which doctors are educated or by new types of in-service training or even by an inspectorial system. If mortality-prone households are ones characterized by an unusually rigid patriarchal structure, then women and children may have to be given more decision-making power through the strength provided by female household health visitors with strong backing from the government and strong connections with the community health system. The situation might further be facilitated if these visitors also include family planning in their mandate. If women have access to too little money to pay for treatment, especially where there are divided budgets, then the health administration may have to introduce some kind of accounts system on the bill-now-pay-later principle with community organizations responsible for collecting payment from the husband.

Health transition research shares a certain characteristic, although perhaps even more pronounceably so, with other social research. Many of its findings may not have to be translated into interventions, for they may achieve mortality reductions just by becoming widely known. Patriarchs who become conscious of the fact that their sons' lives are being endangered because of the incapacity of their wives for making health decisions and the impact of their lack of self-confidence on the survival chances of their children, may become less patriarchal, at least in this regard. Governments which reflected the views of their electorates in giving little encouragement to female education are already shifting their position

as a result of the demonstration that this endangers the success of both health and family planning programmes. It is possible that it will be shown in retrospect that fertility research had more impact on reducing fertility through its discoveries becoming part of everyday thinking than through the family planning strategies that were modelled from them. The same is likely to be the case in the health transition field.

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