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Infant mortality: a Turkish puzzle?



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Abstract

In this paper I examine the problem of high infant and child mortality in Turkey. In view of my research results, I argue for a re-evaluation of the theoretical paradigm that views childhood issues primarily in relation to mothers rather than within the dynamics of a broader cultural context. The present emphasis on mothers as a primary key to the problem reflects an extensive and implicit conceptualization of 'motherhood' that has penetrated scientific discourse and methodology. The research results presented here show that in our Istanbul sample most of the factors related to high child mortality are household and cultural conditions encircling the mother, and that only a few of the factors are direct attributes of the mother herself. These results have significant implications for research and policy on child health.

The research problem: Turkey's unexpectedly high infant and child mortality rates

In Turkey, as in most Middle Eastern countries, neither the GNP per capita nor other criteria of development seem to explain the high incidence of infant deaths. Countries with a mortality rate for adults and children over age five similar to that of Turkey have a much lower infant mortality rate (Adlakha 1970:31,56,181). The causes of the particularly high infant and child mortality rates in Turkey relative to mortality at older ages remain unexplained. It is not clear whether they are due to certain child-specific diseases or health conditions that uniquely affect Turkey, or malnutrition, or whether the health-care practices that exist for adults do not exist to the same extent and effectiveness for infants and children (Shorter and Macura 1983:21). Aksit and Aksit comment that

We are aware that the historical relationship between income and mortality during economic development can be highly variable, yet it is puzzling that Sri Lanka with one-third of the Turkish per capita GNP has half the Turkish infant mortality (Aksit and Aksit 1989:571).

Similarly, Tuncbilek (1989:3) considers infant mortality to be one of Turkey's major problems, particularly given the contradiction with other socioeconomic and demographic variables.

Research on the social determinants of infant mortality rates

Research on infant and child deaths in developing and developed countries has generally concentrated on intermediate variables affecting child health through their medical-physiological effects. Studies have been carried out to measure the effects of nutrition, of breastfeeding and of morbidity (Brown 1984; Hoffman and Lamphere 1984; Martorell and Ho 1984; Tezcan 1985). The role of respiratory and intestinal diseases and infectious illnesses has been examined (Foster and Anderson 1978; Black 1984; Bradley and Keymer 1984).

Socioeconomic environmental factors and level of technology have also been the focus of study. Generally, a positive and significant relationship has been found between the total number of pregnancies a woman has had, the total number of her children, the number of members of the household, and infant mortality. A negative and significant relationship has also been found between the amount of schooling the mother and father have had, the level of family income, and infant mortality (Adlakha 1970; Briscoe 1984; Schultz 1984; Ware 1984; Tuncbilek and Ulusoy 1988). Scientists often try to explain mortality by stating the existence of a relationship between mortality figures and selected socioeconomic variables such as these. The manner in which these variables affect mortality and the way they are interconnected with cultural practices, national and global policies and ideologies, however, are left unexplained (Mosley 1984:25, Scheper-Hughes 1985).

Mosley and Chen (1984) have proposed a framework for research on child survival which shows how the causal linkages can be traced back from death to health status, thence to a variety of intermediary factors, and finally to a layer of determinants which they place in one category called 'socioeconomic'. It has been remarked that, even though they have received a great deal of research attention, the socioeconomic determinants remain a black box to this day (Mosley and Chen 1984; Shorter 1987:1).

The conditions beyond the material and environmental have emerged as important research issues (Caldwell 1986; UNDP 1991). Scheper-Hughes (1985) touched upon the same question in her research in a Brazilian shanty-town in 1982, pointing out that

the so-called Brazilian Economic Miracle [which is] a policy of capital accumulation ... has increased ... the Gross National Product [but] childhood mortality rate has been steadily rising throughout the nation since the late 1960s.

Indeed, political-party leaders advocated free distribution of children's coffins in the district as election propaganda (Scheper-Hughes 1985:292).

While infant mortality rate seems to be a simple health statistic that reflects material culture and environmental conditions, it is also a silent but meaningful indicator of a country's (or community's) life-style, of the value given to different generations, age-groups and genders, and of many unspoken balances of power in that culture.

The research focus

With the above considerations in mind, my research was aimed at the specific problem of identifying cultural practices and conditions that may be reasons for the higher than expected infant mortality rate in Turkey. I wanted to study both the implications of national policies and the local cultural factors operating together to determine child health in Turkey.

Furthermore, through intensive in-depth interviews and observations of women with different child-mortality experiences, I hoped to identify the family circumstances, proximate kin and cultural factors that lead to infant deaths. I wanted to see how national policies reflect on local conditions and family life and how these circumstances in turn influence child care and health.

'Gş• kent': the research area in Istanbul

In view of the rapid and increasing urbanization in the country, I chose an area that would be representative of this trend. Within the selected area, which has a low-income population, I adopted a multivariate approach for a more refined measure of mortality experience.

The area of Gş• kent (a pseudonym) was chosen as the location of research because it had received migrants from nearly all parts of Turkey for the past 20–25 years. It was assumed to be similar in many

respects to some of the more recently settled *gecekondu*¹ areas of Istanbul, and also to be illustrative of differentials within Turkey. As a whole migrants are a select group from their home regions and not a pure cross-section of the country, but nevertheless, I expected to obtain strong clues as to what is causing the unexpectedly high child mortality in Turkey. Gş• kent is situated in a densely populated area of Asian Istanbul. It is inhabited by about 200,000 people, nearly all of whom are rural migrants who came to Istanbul from Central and Eastern Turkey and the Black Sea Coast, including a small group of gypsies.

The household survey and the subsequent in-depth interviewing took place in a particular district within the official boundaries of the *muhtarlik* (local headman's jurisdiction), constituting about 28-30,000 inhabitants within the larger Gş• kent suburb. This district has a main road with a number of grocer's shops, markets, a few butchers, many furniture, electrical-goods and kitchenware shops, construction-material and carpentry shops, barbers, clothing and shoe shops, and a large number of private doctors' surgeries and pharmacies. The presence of shops selling things like furniture and electrical goods points to the presence of a consumer market in the district. Within the boundaries of the district there are three mosques, about 20 men's coffee houses, and several beer shops or billiard halls (which are also local social and business centres), and a physical activity centre for men. During the research, one apartment in the district was converted into a mosque, bringing the total number of mosques to four.

Research methodology

Sampling

The primary research methodology was to carry out in-depth interviewing and observation-based research for a limited number of households. However, I also wanted to be able to generalize the findings for the community involved and to be able to present these numerically. Therefore, I chose a combination of methods that would allow me both to have a rich personal historical insight into the micro worlds and daily lives of individual women and their families, and also that would enable me to quantify these findings. Rather than simply conducting a classic ethnographic study where households or individuals are selected purposively (according to various criteria) in small numbers, I began by conducting a representative sample survey in Gş• kent.

The sample of 1025 households was distributed over nine streets that were randomly selected from the municipality plan. The suburb is characterized by adjacent buildings or flats where tenants and landlords, who represent different economic and migration patterns, live next door to each other. Therefore, in selecting my sample of households I chose a small but complete area and investigated every individual dwelling, rather than using a random sample of dwellings over a wider area; thus, I aimed to include all the different types of dwellers on those streets. Information was collected from nearly all the dwellings on these streets.²

In this survey, carried out in November and December 1986, respondents were asked the number of inhabitants, their ages and dates of birth, how they were related to each other, and whether any

¹ The massive rural exodus of a large part of Turkey's population has led to a form of settlement in cities which is described as *gecekondu*, which literally means 'coached overnight'; the term refers to the quick, unplanned and often illegal nature of these settlements which are populated mostly by members of the urban working class and by the unemployed and underemployed.

² Those houses where no respondents could be found were visited twice more in an attempt to get full coverage of the sample streets. The questionnaires were administered by myself and seven research assistants.

women were then pregnant. Secondly, they were asked whether anyone had died the previous year, and, if so, their age and the cause and date of death.³

Results of the preliminary 1986 survey: 1025 households

The preliminary survey showed that most of the demographic patterns in Gş• kent were similar to those found in other parts of Turkey, so long as we look at broad features only. Household size showed a mean of 4.7 persons, age distribution was about 50 per cent under age 20, sex ratios were normal.

The same is true of household composition: 71 per cent of households were nuclear families composed of husband, wife, usually children and sometimes semi-permanent guests. Some sets of nuclear families living in the same apartment block might in fact be classified as semi-extended families, where a nuclear family resides in the same building with other related groups eating most of their meals together, spending time together, and going to their individual apartments only to sleep. Some of these families have been classified as 'extended families', depending on how the respondent actually described and named her type of family. Some researchers have distinguished 'temporary' from 'permanent' extended families, depending on who is the breadwinner in the household. In our survey however, the extended-family household is defined as a household unit consisting of at least two generations of adults, sharing housing and pooling resources for basic household expenditures.

The traditional patriarchal model of the extended family household consists of the father, mother, son, son's wife and children. This form of family unit undergoes various permutations according to the life-cycles of its members (Timur 1981:117-132). Thus, in the survey sample, a total of 21 per cent of the households are patrilineal extended families, three per cent are extended families where the wife's relatives are present, three per cent are broken homes, and one per cent are inhabited by single dwellers (seven middle-aged men and five women live alone). In three households, the husband is a polygynist with two wives present in the same household.

As regards infant mortality rates, however, Gş• kent had a higher rate than did Istanbul, and Turkey as a whole. This conclusion is reached by noting that there were 16 deaths among the 164 babies born during the year before the survey. Nearly half of these 16 babies died before completing their first month. A simple ratio of deaths to births (97 per thousand) would minimize the infant mortality rate because we could not follow every birth for a full year after it took place, thus missing some deaths. At a maximum, the rate might be as high as 148 per thousand, using the indirect method of estimating from the proportion surviving, which takes into account this unobserved risk period. For the city, or more precisely, for the province which is almost the same, the estimated infant mortality rate for the same time was approximately 79 per thousand, and for Turkey 90 per thousand (Shorter 1989a).

From these preliminary results, it was clear that Gş• kent had poorer-than-average child health, compared to both national and Istanbul statistics. This was to be expected since our sample included some particularly poor migrant families.⁴

³ I am aware of the difficulties and the mistakes involved in capturing accurate information by the one-year time period questions (Shorter 1989a:21-26). However, we had the advantage of good interviewing and careful administration of the questionnaire (see also Blacker and Brass 1979).

⁴ Variations in infant and child mortality can be expected not only within a country, but also between social classes in a city. Shorter remarks that differences internal to urban society are themselves remarkably great. According to the 1976 census, infant mortality rates for Damascus were 83.7 for the lower class and 34.4 per thousand for the upper class (Shorter and Zurayk 1985:67). Again, when Batani looked at child mortality in Cairo governorate, differentiating between groups of mothers on the basis of their education, her results showed that the lowest social class suffered child mortality risks three times as great as the highest class: 50.7 per thousand to 141 per thousand (Shorter 1989b:14,15).

As infant mortality is also indicative of other problems of early childhood, the subsequent in-depth questionnaire was not limited to questions about infancy alone, but at the next stage of the research detailed questions were asked about all children born and their survival or death early in life.

In-depth interviews

In order to gain insight into cultural issues along with precise and comparable data for all the families, I took a subsample of the original 1025 households. This one-in-four sample was selected by taking every fourth household in our original sample list. Before making the systematic selection, I enriched the selection in favour of families with recent infant mortality by selecting all the women who had an infant death during the last year (N=16). The one-in-four selection was done without removing the 16. The purpose was to be sure to have enough representation of mortality as well as survival to be able to study the variation.

For this purpose, one woman was selected in each household giving priority to (1) a woman under 45 who had children; (2) or, if there were no such woman, then a woman older than 45 with children; (3) or a woman married or single with no children. In this way, we interviewed a total of 251 women. For statistical analysis of the factors associated with child mortality, we excluded the women (married or single) who had no births. For the present analyses, I selected the 229 women who were married, widowed or separated and who had at least one birth.

To sort out the observation-based, anecdotal and ethnographic material, I decided to take into consideration the major methodological issue of taking into account the risk of death for different ages of children.⁵ In the final analysis, to be able to capture the different degrees of experiencing child mortality when comparing the women in our sample, I used Preston's method of proportion dead among children ever born by the marital duration of the women (see Farah and Preston 1982).

The proportion of dead children for each woman is compared with the mortality level of all women with the same marital duration in this population. Thus, for each woman, there is an expected proportion of dead children for her own group of marital durations. The ratio between her actual proportion of dead children and the expected proportion dead gives an indication of her specific individual situation, showing whether her child mortality is better or worse than expected given her marital durations. Marital duration is an indicator here of how long ago her children were born (see Table 1).

The proportions dead shown in Table 1 are the average experience of the mothers by marital groups. Following Preston, I consider the mean proportion dead to be the expected values for an 'average' woman. In this way I construct a simple index: Actual PD/Expected PD. The results range from 0 for a woman with no dead children to as high as 10.4 in the most severe cases in the sample. This is called the child mortality index (CMI) for each woman (see Table 2).⁶

Table 1
Mean proportion dead of children by marital duration groups of mothers

Marital duration (years)	Total CEB*	Total dead	Mean proportion dead	Cases
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⁵ The likelihood of a child's having died is highly dependent on how long ago the child was born. This is the risk of death that causes more deaths to be recorded as a group of children get older. Our women were not all 'equal' in this respect.

⁶ My method is similar to, but not a strict application of, the more complex methodology used by Farah and Preston (1982) and is suitable for a small study.

0-4	52	5	.0962	38
5-9	157	21	.1338	64
10-14	181	32	.1768	49
15-19	144	30	.2083	31
20-24	106	22	.2075	21
25+	142	41	.2887	26
Entire population	782	151	.1931	229

*CEB: Children ever born⁷

⁷ Table 1 implies lower infant and child mortality than was measured earlier in the paper using infant deaths only for the last year and births only for the last year. Both items were collected in the larger sample. When an indirect estimate is calculated using the Brass-Trussell method (United Nations 1983:81-85), the estimate of the infant mortality rate is approximately 112 per thousand (durations of marriage less than 15 years and the East model).

Table 2
Child Mortality Index

Index	Frequency
0.0	127
0.49–1.00	21
1.01–1.50	35
1.51–2.00	18
2.01–5.00	24
10.4	4
Total	229

Exploring the relevance of cultural factors

Detailed information (over 500 separate variables) was collected from each woman during the in-depth interviews.⁸ After initially searching for associations of single variables with child mortality as measured by the child-mortality index (CMI), I condensed the voluminous data into several compound variables, each of which expresses a particular concept. Frequency distributions of the results for some selected compounds in summary, together with simple correlations (one-variable) with the index CMI, are shown in Table 3.

Table 3
Correlations of compound variables with Child Mortality Index

Compound variable	Correlation coefficient	Significance (p)
Age of women (high = older)	-.0084	.450
1. Place of origin of women, parents, i.e. effect of being rural. High = rural.	+.0057	.466
2. Proportion of years in woman's life spent outside of Istanbul. High = more years outside Istanbul.	+.0566	.197
3. Property ownership (family capital: land, house, apartment etc.) in Istanbul, and in place of origin. High = more capital owned.	+.0207	.378
4. Consumer goods available in the household (TV, radio, video, music set etc.; total of 16 items). High = more items in the household.	+.0374	.287
5. Religious devoutness (praying, fasting, reading Kuran in Arabic, children's religious education). High = more religious.	+.0366	.291
Continued over		
6. Health status of woman and household members. High = worse health.	+.0812	.110

⁸ A substantial proportion of this consisted of open-ended questions trying to capture the original responses of the women.

7.	Amount of bread consumed daily per head. High = more bread consumed.	+.1194	.036
8.	Woman's father's state of literacy and formal education. High = more educated.	-.0240	.359
9.	Woman's mother's state of literacy and formal education. High = more educated.	-.0867	.096
10.	Woman's own total education: literacy and schooling. High = more educated.	-.0421	.263
11.	Amount of drinking and smoking by members other than the woman. High = more of these consumed.	+.1158	.040
12.	Woman's attitudes towards abortion. High = conservative.	+.1389	.018
13.	Household composition. High = coresidential, patrilocal extended.	+.2205	.000
14.	Husband's state of literacy and formal education. High = more educated.	-.2621	.000

In a multiple-regression analysis using these 14 compound variables, the most influential factors affecting child mortality were found to be (1) the husband's education, (2) household composition, (3) the woman's attitudes towards abortion and (4) the amount of alcohol and smoking in the households. The first two and the last of these variables have already been found in other studies to influence child mortality. The GŸkent study is the first to identify the third measure, the woman's attitude to abortion, as important for child health.

In the final analysis, I used the four strongest variables in a multiple regression model with CMI as the dependent variable (Table 4).

Table 4
Multiple regression analysis of the four outstanding factors

Compound variable	Slope coefficient (b)	Standardized slope (beta)	Significance (p)
1. Husband's education	-.85206	-.23906	.0002
2. Household composition	+.41212	+.19586	.0019
3. Woman's attitudes towards abortion	+.17021	+.13265	.0350
4. Drinking and smoking in the household	+.26709	+.12701	.0431
Constant	1.09634		.0018
R-Square = .139			

Discussion of the findings of multivariate analysis

The higher the husband's education the lower the child mortality

In our sample, 97 per cent of the husbands were said to be literate. Only eight per cent had never been to school; ten per cent went to primary school, but dropped out; 62 per cent finished primary school. Eleven per cent went to secondary school, but did not complete it; only nine per cent had completed secondary school, or had any further education.

In this compound, one point was given for being literate, and another point for having any education further than primary school.

Table 5
Husband's education compound

Value	Frequency	Percentage	Average CMI
0	8	3.5	3.1283
1	176	76.9	0.9948
2	45	19.7	0.3182
Total	229	100	0.9987

In a cross-national study by the United Nations (1985), it was shown that mother's education was a more powerful explanatory variable than father's education in rural areas. It is suggested that in urban areas variation in the father's education was more extensive and associated more with class and status differences and, perhaps for these reasons, the father's education rivalled the explanatory effectiveness of the mother's education. Hobcraft, McDonald and Rutstein (1984) in their cross-national study found that in Latin American countries, mother's education had more explanatory power; in some Asian and Islamic countries father's education and occupation and mother's work status have emerged as rival predictor variables (Aksit and Aksit 1989:571-572). In my sample also, the husbands' formal education seems more relevant to child mortality than is women's formal education or other criteria.

Similarly, in a study of the 1982 birth cohorts, Toros and Kulu (1988) found that father's education was one of the most important factors associated with infant survival.⁹ Babies whose fathers did not have primary school education were 1.6 times more likely to die within the first year of life than babies whose fathers had at least finished primary school. Babies whose mothers had no primary school education, however, were 1.15 times more likely to die in their first year.¹⁰ In this study the authors also considered rural or urban residence, maternal age, birth intervals, parity, use of health services, swaddling, and standard of life. With multiple regression analysis, they found education and birth intervals to have the greatest effect on infant mortality (Toros and Kulu 1988:18-19,63). These findings of course pose more questions about the process of change that education initiates or provides.

⁹ For the 1982 birth cohort infant mortality was found to be 103.8 per thousand.

¹⁰ Nevertheless, even though father's education has more explanatory power than mother's education in their study, in their conclusion Toros and Kulu (1988) concentrate on and give prime importance to mother's education, cite mother's level of education as one of the most influential factors affecting child health, and secondarily cite father's level of education as also securing lower levels of infant mortality. I find this to be a significant example of the prevalence of a conceptual emphasis on mothers as a primary problem in scientific discourse.

In my study, on the other hand, the women's comparable formal education does not emerge as one of the most important variables. In Gş• kent, the husband's education may be a more important determinant because the women are considerably restricted in their movements, and subject to the authority of their husbands in making daily decisions. For example, 47 per cent of the women in the subsample said their husbands did not allow them to go out into the street alone, 28 per cent said their husbands did not allow them to go out shopping, 11 per cent to invite over female friends, 10 per cent to socialize with neighbours, and nine per cent to see the wives' own relatives. Furthermore, in response to a set of questions meant to ascertain decision-making behaviour, only a minority of women said they had more of a say over certain issues than their husbands. The vast majority of women did not feel they were the decision makers in their households.

Furthermore, more education for the husband may mean easier access to important institutions like hospitals and to relevant health-related knowledge. Also, it may mean that the men are less dependent on the world view imposed by their own families. More than the content of the education they have received, their years of schooling may mean an external reference point for the men and thus a break from the patriarchal constraints which also affect their wives and children. The emancipation of men by educational experience may serve women by allowing men more freedom to support the women in their own lives, which includes their reproductive choices and how they raise their children.

Household composition: patrilocal extended households

The in-depth interview results showed that not only women who were currently living in patrilocal extended households,¹¹ but also women who initially had given birth (or had become pregnant and miscarried) in a patrilocal extended family, tended to have a higher rate of child mortality than women who had their first birth or miscarriage in a nuclear family. Another criterion in assessing the extent of 'patrilocal residence' for the woman was the presence of her mother-in-law during the in-depth interview. Generally we had no problem in interviewing the women in the sample privately: many women even expressed appreciation that we were doing research on child health. Some mothers-in-law, however, were apprehensive when we said that we wanted to talk to their daughters-in-law privately, and some would not allow full or even partial privacy during the in-depth interviews.

I took such problem cases to be an indication of severe restriction on the young women, an indication of control of the daughters-in-law and the extent to which they are blocked from outside influences. These young women were classified separately (see Table 6).

¹¹ In my interview sample four different types of households were classified: (1) 68 per cent of the households were nuclear; (2) 27 per cent were extended; this group comprises 25 per cent where the couple lives with the husband's relatives (patrilocal extended), and two per cent where both the husband's and the wife's relatives live with them; (3) in three per cent of households the wife's relatives live with them; and (4) two per cent are 'fragmented' households consisting of a mother and children, but not an adult couple.

Table 6
Child mortality in relation to household types

Type of household	Number	Percentage	Average CMI
1. At present nuclear, and nuclear during first pregnancy of woman	90	39.3	0.6312
2. Patrilocal extended either at present or during first pregnancy	95	41.5	0.8532
3. Patrilocal extended at present and also during first pregnancy	41	17.9	1.3355
4. Patrilocal extended at present and during first pregnancy and mother-in-law at least partly present during interview	3	1.3	4.3379
Total	229	100	0.9998

The literature provides evidence from the Middle East and elsewhere suggesting that the relationship between extended household structure and higher infant mortality rate is not unique to GŞ• kent. In her research on the relation between household structure and child mortality in low-income areas in Amman, Deeb (1987:152) found that the presence of another woman (usually mother-in-law) was associated with a high childhood mortality, despite the fact that these extended households were characterized by a higher total income than nuclear households. A similar finding was reported by Caldwell (1979) of Nigerian women, that children living in extended households experienced higher mortality than children living in nuclear households. Caldwell argued that this was because mothers in extended households were restricted in their decision making by traditional beliefs imposed by the in-laws. In contrast to this, a study in Malaysia by Butz, DaVanzo and Habicht (1982) found that the presence of grandparents was associated with lower infant mortality.

To my knowledge, no other research on Turkey has tried to explore the relationship between household structure and child mortality. My data indicate that children born into patrilocal extended households have a higher incidence of mortality than children born into nuclear families ¹²

In view of this, given the dynamics of a culture that finds its core expression in the relationship structures of the family and its main arena of practice in the household, living with in-laws under the same roof presents serious handicaps for at least some of the married women in their nurturing and mothering capabilities toward their children. This is true not only in individual decision making, but more generally in a daughter-in-law's overall secondary and servile position in a patriarchal, gerontocratic family. This position, combined with a patrilocal extended household, and the severity of the constraints and interferences by a woman's in-laws, can crucially determine the survival of her

¹² In the interview sample and also in the survey sample of 1025 households an interesting difference became apparent in the family structures of the households which had experienced infant mortality in the previous one-year period. Extended patrilineal families constituted only 22 per cent of all households within the survey sample, but 38 per cent of households which experienced infant mortality in the previous year.

children. The question is not only one of individual health-related habits or curative actions, but one of overall mental health for the mother and her child within the patrilocal extended household.¹³

In research related to child health as well as in popular thought in Turkey, the influence of the extended family and the older generation on child health has in general been considered to be positive; closeness among the family members has been one of the prime points of pride and cultural identity in Turkey. The transmission of experience and skills in child-rearing has been considered valuable for child development, as has the passing down of a cultural heritage embodying a system of mutual support among kinsmen.

Health practitioners have sometimes questioned the validity or even suggested the harmfulness of traditional ways of bringing up children, often imposed upon the young mother by elderly women, in most cases the mother-in-law; but this questioning has been limited to considerations of individual traditional practices such as feeding, swaddling, or specific ways of curing diarrhoea, the perception of illness in the child, or the imposed timing of taking the child to the doctor (see Cin et al. 1975; Aksayan 1983). Little attention has been given to the overall well-being or the psychic situation of the young mother within the patriarchal extended family, or to her nurturing responsibilities and capabilities within the extended family.

However, in social science and other sources, it has been extensively commented that living with a mother-in-law under the same roof will bring a considerable amount of strain for a young woman (Demirsar 1985:262). In fact, the strains involved in the relationship between mother-in-law and daughter-in-law are perhaps one of the most universally encountered issues, documented in popular literature, anecdotes, mythologies and anthropological studies. Turkish culture has abundant contemporary data from the media, films, folk culture, literature and social science research indicating the difficulties for a young bride living or interacting with her in-laws. It is said that within the family young women are controlled and their status is low.

Especially the young bride is expected to serve all the adults within the patriarchal household. Once she bears a son, however, her status increases, and it reaches a peak when the son grows up and brings in a bride, the cycle thus repeating itself (Kagitçibasi 1982:12).

Abadan-Unat (1986:187) has noted that in recent years the position of 'the woman' has improved more than that of 'the young woman', who is still subject to strict social control.

In line with his comments and perceptions on Turkish culture, the child psychiatrist Yşrıkoglu (1980:165–166) finds that living under the same roof as an extended family is detrimental for child health, and he advocates that grandparents live nearby. The geographical or psychological extent of this distance, however, is not specified.

How can these general ideological or specific intrafamilial situations reflect on child health or child survival in the household? Certain psychological theories associate emotional deprivation with poor health, and even death in infancy and childhood. Spitz's (1946) research, for example, has led to the further conceptualization and testing of 'anaclitic depression', developed by 6–8 month-old babies when they are deprived of emotional closeness for three months. The symptoms are crying and insomnia and a predisposition to illness. If there is separation from the mother for more than five months with no other substitute emotional support, not only physical but also mental deficiencies

¹³ Tuncbilek and Ulusoy (1988:64) cite consanguineous marriages as another factor causing infant mortality rates to rise. In my research I was not concerned with the issue of genetic diseases, but with the social relations within which consanguinity plays a role as part of the extended family and patriarchal ideology.

appear. 'One stage further and the baby loses resistance against infectious illnesses, and the mortality rate increases' (Hopf 1986:123-124).

A woman from my subsample had lost one of her three children: her first child died at two months old. She was living with her husband's uncle's family and there were seven people in the household. She recalls that they were very bad-tempered, interfering people. Her husband used to drink, and later she had to divorce him because of his heavy drinking. 'I couldn't go near my child when it was crying. They wouldn't let me. She cried and cried and died'.

Another case study: a woman from Central Anatolia was married in her early teens. Even though she wove carpets and contributed significantly to the upkeep of the patrilocal family into which she moved, she recalls being pushed around and belittled. In addition, the villagers made fun of her for giving birth so young. When her husband went to military service, her first baby had pneumonia. The baby was ill for over 40 days, but her mother-in-law paid no attention and would not let her see a doctor. 'It'll pass', she kept on saying. Her own mother, on the other hand, went around and collected medicine from families of other sick babies in the village and tried to give these to her grandchild. The baby eventually died.

I am not suggesting that the mother is always prohibited from physically nurturing her child. In the analysis of transitional objects, psychologists have made the further distinction of physical and psychical separateness of the caregiver: 'It should be noted, however, it is not the physical but psychical separateness from the mother which counts more crucially in the transition phenomena' (G lcerce 1990). Also, Brazelton et al. have observed in their film series 'The Love Dance' a number of rhythmic love movements between the young baby (the oldest being four months old) and the mother. The young baby and the mother seem to develop an almost 'instinctual' rhythmic response to each other. If the mother is unable to respond to this rhythm, for example if she has a severe approach or if she is inexpressive, the situation becomes incomprehensible for the young infant (Yazgan 1990:22).

Given the inherent conflicts of relationships among in-laws and their implications for the young mother, the traditionally established expectations of daily service, and the power struggle especially between mothers-in-law and daughters-in-law under an overall patriarchal value system, close proximity with in-laws becomes detrimental not only to the formation of the conjugal bond between husband and wife but also to the psychological well-being and independence of the young mother. This damages her nurturing capabilities and negatively affects the survival of infants and children. The extreme form of this proximity is living together under the same roof, as is the case in households defined as patrilocally extended households.

Of course, detrimental influences may also occur when the young mother is living with her husband separately in what is defined as a nuclear family. The nature and the frequency of the interferences and the nature of the psychological bond between the husband and his parental family will determine the extent of the husband's independence and the extent of control the young mother has in bringing up her children and sharing the resources of the household.

I do not want to dismiss the role of the mother-in-law as valuable teacher, helper and friend to young women (see Mernissi 1975:69-80), nor deny that there may be many exceptions where mother and daughters-in-law genuinely live together harmoniously. Neither am I dismissing the valuable role of the family as a protective shelter for individuals in a society where there is hardly any other form of emotional, social or welfare security. Also, of course, every case where there are forms of oppression within the household will not result automatically in poor child health and mortality.

However, oppression encountered by women in their marital families does contribute significantly to poor child health and mortality by significantly reducing their ability to nurture their children physically and emotionally. The higher incidence of infant and child mortality encountered in patrilocal

extended families does seem to support this hypothesis. In my sample children born into patrilocal extended families have had a higher incidence of mortality than children born into nuclear families where there are no agnatic kin and no visibly interfering mother-in-law.

The mother's attitude towards abortion

The third variable is an indication of the woman's attitudes towards taking a radical initiative for her own reproductive course, and the degree of her conformity (or her internalization) with values that subject the course of her reproductive life to decisions made within the patriarchal family logic and within the context of secular or religious societal reference points.

In this compound variable I tried to assess the women's attitudes towards abortion. Women were asked if they thought it was all right for a woman to have an abortion if (a) the pregnant woman was poor and already had a lot of children, (b) the medical doctor said the pregnancy was harmful for the woman's health, (c) the medical doctor said that the baby might be born deformed or with a physical disability, or (d) none of the above negative situations were present, but the woman was unwilling to have a child. Women were given one point for each separate condition where they stated that it was not feasible to have an abortion (see Table 7).¹⁴

When these variables are examined individually, it is clear that 83 per cent of the women (N=190) thought that it was feasible to have an abortion if the child would be born deformed. Similarly, 83 per cent of the women (N=189) thought that it was feasible to have an abortion if the pregnancy meant harmful health effects for the pregnant woman. Seventy-four per cent of the women (N=169) thought that it was feasible for women to have an abortion if they already had children, and were poor. Finally, a reduced number of women, 57 per cent (N=131), but nevertheless again the majority, felt that it was all right for a woman to have an abortion if she did not want to have a child even without the presence of the above negative conditions.

Table 7
Women's scores as regards their attitudes towards abortion

Value	Frequency	Percentage
0	116	50.7
1	53	23.1
2	31	13.5
3	9	3.9
4	20	8.7
Total	229	100

¹⁴ The actual law concerning abortion in Turkey received much public and parliamentary attention, and was finally accepted in parliament in May 1983. In summary the law states that termination of pregnancies up till the end of the tenth week is legal upon the request of individuals, but in the case of those who are married, the consent of both spouses is necessary for those legally authorized to perform these operations. Even though in practice most health practitioners will not ask for the husband's permission, it does mean that the law allows the husband the final say over the decision of abortion.

To my knowledge, no other research has so far tried to build a relationship of women's attitudes to contraception and abortion with child mortality. However, in this study, the responses about women's attitudes to abortion also give an idea of the women's perception of their own initiative and control in their reproductive life. One of the conservative arguments given by many women in my sample for not accepting abortion was that since a woman has conceived, she must go ahead and give birth. This was opposed by other women who stated that a woman should do what she feels is feasible and suitable to her own particular condition.

The fact that this variable had more significance than women's formal education seems to suggest that in a society where women are mostly confined to the house and to family relationships, and where their reproductive contribution is crucially important, how women perceive themselves in relation to their reproductive life has more important consequences for child mortality than years of schooling in formal state education. It is meaningful that women who had the strictest attitude towards abortion, those who stated that women should go ahead and give birth under whatever circumstances once they became pregnant, also had the highest experience of child mortality.¹⁵

The prevalence of drinking and smoking by household members

Studies elsewhere have already established the links between low birth weight and mothers' smoking, and the detrimental physical and psychological effects of the mother's excessive drinking on child health and infant mortality (see Hulbert 1989:19-21).

In this compound variable, households where there was a regular smoker (other than the mother) got one point; households where there was at least one alcohol drinker (mostly husbands or male in-laws) got another point. If this member was quoted as drinking at least two to three times a week, then a further point was given (see Table 8). Here there are two extreme types of households: in 19 per cent of the sample there is no smoking or drinking; in six per cent there is smoking and also excessive drinking.

Table 8
Smoking and drinking in the households

Value	Frequency	Percentage
0	44	19.2
1	134	58.5
2	37	16.2
3	14	6.1
Total	229	100

Again, the research points to the importance of conditions created by people other than the actual mother of the child. Although most of the previous research has concentrated on alcohol and cigarette consumption by the mother, in my sample poor child survival is linked with the smoking and drinking

¹⁵ This important issue brings us also to question the recent concerns in the USA over issues of mother rights versus child (or foetal) rights, where once again mothers are held solely responsible for the well-being and survival of children, to the exclusion of fathers' responsibility (Politt 1990a,b).

of household members other than the mother. In the case of heavy drinking, this obviously implies the negative psychological effects of living closely with people with drinking problems, as well as the expenditure of the household budget for smoking and drinking.

Comment on the four findings

Only one of the most important four compound variables seems to be a personal characteristic of the mother herself: her attitude towards the 'legitimacy' or acceptability of abortion. The other three variables, her husband's education, the presence or absence of agnatic in-laws and heavy drinking and smoking in the household are all 'environmental' factors within which the mother tries to nurture and raise her child.

The sample seems to suggest two extreme types, representing two different social environments: in the 'bad cases' there is extreme patriarchal control of the woman in that she lives with her in-laws; her husband has a poor education, and thus his dependency on his family is greater; she has internalized reproductive values which leave her without much capacity for autonomy; and there is heavy drinking and smoking in the household. In contrast to this picture, in the 'good cases' there is high education and, together with this, a separate, nuclear family residence into which babies are born. The woman's views on abortion are more liberal than religious or secular dictates, indicating a woman ready to try alternatives; and the household is free of the ill effects of alcohol or cigarette consumption.

Concluding remarks

Two separate and rather dramatic events during the field research directed my attention to a critical consideration of the resources available outside the household which the women can mobilize for child health. The first event was the discovery that the free local health-house in Gışkent, belonging to the Ministry of Health and Social Assistance, had been taken over in the early 1980s by a group of local men and turned into a mosque (see GŸrsoy-Tezcan 1991).

The second event was the 1989 local election, with all the campaign propaganda and press news it initiated. An analysis of the election campaign and its media coverage demonstrated the lack of any voicing or visibility of issues related specifically to women's interests. In the election process women appeared to be almost nonexistent as political candidates, voters, and as a separate voice.¹⁶ Within the limits of this article, I do not propose to deal with the issue of local community decisions within the traditional religious and the modern secular decision-making processes, nor with the distribution of surplus capital. I have limited my discussion here to the findings of the in-depth questionnaires.

The results of this part of the study point to the need for a review of the theoretical paradigm that necessitates an almost exclusive linkage of child health to a focus on mother-child bonding, nurturing and a meticulous evaluation of the mother's characteristics. Our research has shown that only one out of the four most influential factors contributing to a high child mortality experience is linked to the individual attributes of the mother: her attitude towards abortion. The other three factors, the father's education, household composition, and smoking and drinking by household members other than the mother, are all beyond the mother's immediate control. Even though it may entail many practical and analytical difficulties, direct data collection from fathers, with a view to exploring the fathers' life experiences and attitudes may yield even more significant results in explaining child health, survival and mortality. This shift of focus from mothers to fathers will facilitate the discussion and analysis of

¹⁶ Since the early years of the establishment of the republic, in the 1920s, women have had full political rights in Turkey. Here, the issue is not one of legal rights but one of actual practice and discourse, comparable to issues of political life in the USA.

the relationship between the State and the family, religion and democracy and their influence on child health at national and international levels.

References

- Abadan-Unat, N. 1981a. Social change and Turkish women. In *Women in Turkish Society*, ed. N. Abadan-Unat. Leiden: E.J. Brill.
- Abadan-Unat, N. (ed). 1981b. *Women in Turkish Society*. Leiden: E.J. Brill.
- Abadan-Unat, N. 1986. *Women in the Developing World: Evidence from Turkey*. Monograph Series in World Affairs. Denver: University of Denver.
- Adlakha, A. 1970. *A Study of Infant Mortality in Turkey*. Ann Arbor: University Microfilms.
- Aksayan, S. 1983. ,ocuk sagligina iliskin geleneksel inanc ve uygulamalar (Traditional beliefs and practices related to child health). Unpublished M.A. thesis, Hacettepe University, Ankara.
- Aksit, B. and B. Aksit. 1989. Sociocultural determinants of infant and child mortality in Turkey. *Social Science and Medicine* 28:571-576.
- Black, R.E. 1984. Diarrheal diseases and child morbidity and mortality. Pp.141–161 in *Child Survival: Strategies for Research*. Supplement to *Population Development Review* 10, ed. W.H. Mosley and L.C. Chen. New York: The Population Council.
- Blacker, J. and W. Brass. 1979. Experience of retrospective demographic enquiries to determine vital rates. In *The Recall Method in Social Surveys*, ed. Louis Moss et al. London: University of London, Institute of Education.
- Bradley, D.J. and A. Keymer. 1984. Parasitic diseases: measurement and mortality impact. Pp.163–187 in *Child Survival: Strategies for Research*. Supplement to *Population Development Review* 10, ed. W.H. Mosley and L.C. Chen. New York: The Population Council.
- Briscoe, J. 1984. Technology and child survival: the example of sanitary engineering. Pp.237–253 in *Child Survival: Strategies for Research*. Supplement to *Population Development Review* 10, ed. W.H. Mosley and L.C. Chen. New York: The Population Council.
- Brown, K.H. 1984. Measurement of dietary intake. Pp.69–91 in *Child Survival: Strategies for Research*. Supplement to *Population Development Review* 10, ed. W.H. Mosley and L.C. Chen. New York: The Population Council.
- Butz, W.P., J. DaVanzo and J.P. Habicht. 1982. Biological and behavioral influence on the mortality of Malaysian infants. *Rand Note* No. N-1638-AID. Santa Monica: Rand Corporation.
- Caldwell, John C. 1986. Routes to low mortality in poor countries. *Population and Development Review* 12:171–220.
- Caldwell, John C. 1979. Education as a factor in mortality decline: an examination of Nigerian data. *Population Studies* 33:395–413.
- Cin, S. et al. 1975. Gecekondu bolgelerinde sosyal arastirmalar, 1. Gecekondu ailesinin sosyal yasami ve • ocuk olumleri (Social research in *gecekondu* areas, 1. Social life of the *gecekondu* family and child deaths). *Journal of the Faculty of Medicine*, Supplementum No. 100. Ankara: University of Ankara.
- Deeb, M.E. 1987. Household structure as related to childhood mortality and morbidity among lower income areas in Amman. Unpublished Ph.D. thesis. Johns Hopkins University, Baltimore.
- Demirsar, A. 1985. ,ocuk ve Anne-Baba Iliskileri (*Child and Mother-Father Relationships*). Istanbul: Redhouse Yayinevi.
- Farah, A., and S.H. Preston. 1982. Child mortality differentials in Sudan. *Population and Development Review* 8:365–383.
- Foster, G.M. and B.G. Anderson. 1978. *Medical Anthropology*. New York: John Wiley and Sons.
- G ylence, Aydan. 1991. Transitional objects: a reconsideration of the phenomenon. Pp.187–208 in *To Have Possessions: A Handbook of Ownership and Property*. Special issue of *Journal of Social Behavior and Personality* 6(6).

- G rsoy-Tezcan, A. 1991. Mosque or health centre? A dispute in a *gecekondu*. Pp.84–101 in *Islam in Modern Turkey: Religion, Politics and Literature in a Secular State*. London: I.B. Tauris.
- Hobcraft, J.N., J.W. McDonald and S.O. Rutstein. 1984. Socio-economic factors in infant and child mortality: a cross-national comparison. *Population Studies* 38:193–223.
- Hopf, H.H. 1986. *Hasta ,ocuk (The Ill Child)*. Istanbul: Afa.
- Huffman, S.L., and B.B. Lamphere. 1984. Breastfeeding performance and child survival. Pp.93–116 in *Child Survival: Strategies for Research*. Supplement to *Population Development Review* 10, ed. W.H. Mosley and L.C. Chen. New York: The Population Council.
- Hulbert, A. 1989. Saving America's babies. *New Republic* 3904.
- Kagitcibasi, C. 1981. Value of children, women's role and fertility in Turkey. Pp.74–95 in *Women in Turkish Society*, ed. N. Abadan-Unat. Leiden: E.J. Brill.
- Kagitcibasi, C. 1982. Introduction. In *Sex Roles, Family and Community in Turkey*, ed. C. Kagitcibasi. Indiana University Turkish Studies 3.
- Martorell, R. and T.J. Ho. 1984. Malnutrition, morbidity and mortality. Pp.49–68 in *Child Survival: Strategies for Research*. Supplement to *Population Development Review* 10, ed. W.H. Mosley and L.C. Chen. New York: The Population Council.
- Mernissi, F. 1975. *Beyond the Veil: Male-Female Dynamics in a Modern Muslim Society*. New York: Schenkman.
- Mosley, W.H. 1984. Child survival: research and policy. Pp.3–23 in *Child Survival: Strategies for Research*. Supplement to *Population Development Review* 10, ed. W.H. Mosley and L.C. Chen. New York: The Population Council.
- Mosley, W.H. and L.C. Chen (eds). 1984. *Child Survival: Strategies for Research*. Supplement to *Population and Development Review* 10. New York: The Population Council.
- Politt, K. 1990a. 'Fetal Rights': a new assault on feminism. *Nation* March 26:825, 840–846.
- Politt, K. 1990b. Checkbook maternity, when is a mother not a mother? *Nation* December 31:409–418.
- Scheper-Hughes, N. 1985. Culture, scarcity and maternal thinking: maternal detachment and infant survival in a Brazilian shantytown. *Ethos* 13:291–317.
- Schultz, T.P. 1984. Studying the impact of household economics and community variables on child mortality. Pp.215–235 in *Child Survival: Strategies for Research*. Supplement to *Population Development Review* 10, ed. W.H. Mosley and L.C. Chen. New York: The Population Council.
- Shorter, F.C. 1987. The production of health in (Cairo) households: observations concerning analytic frameworks. Paper presented to MEAwards workshop on Assessment of Health Interventions, Aswan, October.
- Shorter, F.C. 1989a. *T rkiye'de Bebek ve ,ocuk ...İ ml     ndeki Aszalmalar: Sayim Tahminleri*. Regional Papers. Cairo: The Population Council,
- Shorter, F.C. 1989b. *Cairo's Leap Forward, People, Households and Dwelling Space*. Cairo Papers in Social Science, Vol.12, Monograph 1.
- Shorter, F.C. and M. Macura. 1983. *T rkiye'de N  fus Artisi (1935–1975)*. Ankara: Yurt Yayıncılık, AS.
- Shorter, F.C. and H. Zurayk (eds). 1985. *Population Factors in Development Planning in the Middle East*. New York and Cairo: The Population Council.
- Spitz, R.A. 1946. Anaclitic depression: an inquiry into the genesis of psychiatric conditions in early childhood. *Psychoanalytic Study of the Child* 2:313–342.
- Tezcan, S. 1985. *T rkiye'de Bebek ve ,ocuk ...İ mleri*. Ankara: Hacettepe University.
- Timur, S. 1981. Determinants of family structure in Turkey. In *Women in Turkish Society*, ed. N. Abadan-Unat. Leiden: E.J. Brill.
- Toros, A. and I. Kulu. 1988. Selected factors affecting infant mortality. In *Infant Mortality in Turkey: Basic Factors*. Ankara: Hacettepe Institute of Population Studies.

- Tunbilek, E. and M. Ulusoy. 1988. The relationship between infant mortality and consanguineous marriages. In *Infant Mortality in Turkey: Basic Factors*. Ankara: Hacettepe Institute of Population Studies.
- UNDP. 1991. *Human Development Report 1991*. New York: Oxford University Press.
- United Nations, Department of International and Social Affairs. 1983. *Manual X, Indirect Techniques for Demographic Estimation*. ST/ESA/SER.A/81. New York: United Nations.
- United Nations, Department of International Economic and Social Affairs. 1985. *Socio-economic Differentials in Child Mortality in Developing Countries*. By Barbara Mensch, Harold Lentzner and Samuel Preston. ST/ESA/SER.A/97. New York: United Nations.
- Ware, H. 1984. Effects of maternal education, women's roles and child care on child mortality. Pp.191-214 in *Child Survival: Strategies for Research*. Supplement to *Population Development Review* 10, ed. W.H. Mosley and L.C. Chen. New York: The Population Council.
- Yazgan, Y. 1990. Sevgi dansi (The love dance). *Cumhuriyet Bilim Teknik* 158:22.
- Y  rkoglu, A. 1980. * ocuk Ruh Saėligi (Child Mental Health)*. Ankara: T rkiye Is Bankasi K lt r Yayinlari.

Child survival and health care among low-income African-American families in the United States*



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Abstract

This paper provides an assessment and analysis of the increasing rates of mortality among the children of low-income African-American families in the United States and the intensifying problem of improper health care that seems to have given rise to it. The paper first documents the nature and determinants of the problem and then addresses the issue of policy prescriptions for eradicating the dilemma. The primary problem underlying the health-care access of low-income African-Americans is that there is neither a system of universal entitlement that ties their health care in with the rest of the population nor an explicit and comprehensive strategy for care outside the dominant private system.

Introduction

Child survival rates are considered the most sensitive indicator of a nation's health status. The health of infants and their mothers is of critical concern to any nation. Yet, while the United States can boast of having one of the world's most advanced medical systems, it also leads the Western nations in the percentage of infants born too soon or too small and who are, therefore, at far greater risk of death (Hughes et al. 1986).

These days a baby born in Cuba faces better odds of reaching the age of one than a black newborn in Washington, D.C. The life expectancy of American blacks is not only shorter than that of whites but shorter than the average life span in dozens of developed countries (Monmaney et al. 1987:53).

In such nations as Jamaica, Australia, South Korea, Japan, Canada, and several others in Europe, the reported infant mortality rates are lower than they are for African-Americans in the United States (Farley and Allen 1987:47; National Commission to Prevent Infant Mortality 1988:8–9). Why is this so? What are the underlying factors that have contributed and continue to contribute to this disparity in child survival rates? What policy instruments are required to reverse this trend?

This paper provides an assessment and analysis of the increasing rates of mortality among the children of low-income African-American families in the United States and the intensifying problem of improper health care that seems to have given rise to it. It is intended first to document the nature and determinants of the problem and then to address the issue of policy prescriptions for eradicating the

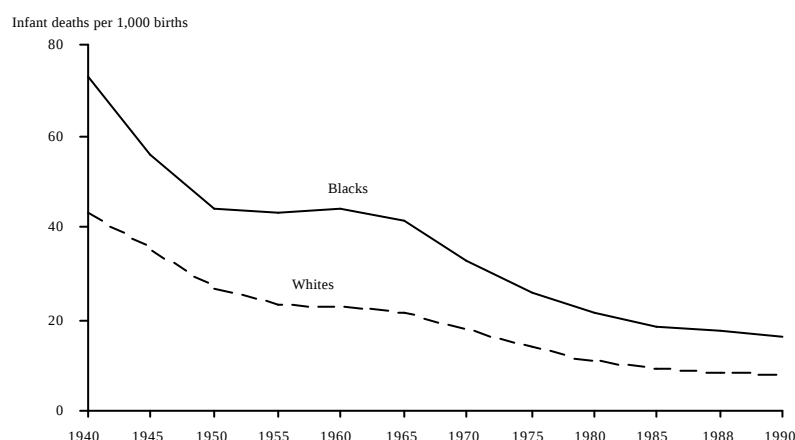
*The views expressed in this paper are entirely those of the author and not those of the United Nations or any other institution to which the author is affiliated. The terms 'African-American' and 'Black' are used interchangeably in this paper. 'Black' will be used to maintain the accuracy of quotations, statistics, and references only.

dilemma. The paper draws considerably from the eight volume *Report of the Secretary's Task Force on Black and Minority Health* that was published in 1986 by the United States Department of Health and Human Services as well as on the *Maternal and Child Health Data Book* published annually by the Children's Defense Fund, and on the annual reports on the health status of the United States submitted to the President and Congress of the United States by the National Center for Health Statistics under the title *Health, United States*.

Child survival and health-care inequities and their determinants

Although health in the United States as a whole has improved, and continues to improve over time, there still exist persistent and significant health inequities for African-Americans and particularly those in the low-income group. Since 1940, infant mortality rates have declined or, put another way, the child survival rates have improved. Throughout this period, however, African-American rates have remained about twice those of whites as seen in Table 1 and Figure 1. In 1988, the white infant mortality rate was 8.5 per 1,000 live births while for African-Americans it was 17.6. More recent data, as reported by Hacker (1992) and Mosley and Cowley (1991), indicate that the ratio remains the same. The infant mortality rate for African-Americans today is about the same as it was for whites 20 years ago. No statistic arouses more pity and frustration than the African-American infant mortality rate. Consequently, for millions of African-American children born today, the future does not seem to hold the promise of success.

Figure 1
Infant mortality rates by race, 1940–1990



Source: National Center for Health Statistics, *Monthly Vital Statistics Report* 39, no. 7, supplement (1990) table 13.

Table 1
Infant mortality rates, foetal-death rates, and perinatal-mortality rates by race, 1950–1984
(number of deaths per 1,000 live births).

Race and year	Infant mortality rate ¹					Foetal death rate ²	Late foetal death rate ³	Perinatal mortality rate ⁴
	Total	Neonatal		Post-neonatal				
		Under 28 days	Under 7 days					

White							
1950	26.8	19.4	17.1	7.4	16.6	13.3	30.1
1960	22.9	17.2	15.6	5.7	13.9	10.8	26.2
1970	17.8	13.8	12.5	4.0	12.3	8.6	21.1
1975	14.2	10.4	9.0	3.8	9.4	7.1	16.0
1976	13.3	9.7	8.2	3.6	9.3	6.9	15.1
1977	12.3	8.7	7.4	3.6	8.7	6.5	13.9
1978	12.0	8.4	7.0	3.6	8.4	6.0	13.0
1979	11.4	7.9	6.6	3.5	8.3	5.9	12.5
1980	11.0	7.5	6.2	3.5	8.1	5.7	11.9
1981	10.5	7.1	5.9	3.4	8.0	5.5	11.3
1982	10.1	6.8	5.6	3.3	7.9	5.4	11.0
1983	9.7	6.4	5.4	3.3	7.4	5.0	10.3
1984	9.4	6.2	5.1	3.3	7.3	4.8	9.9
Black							
1950	43.9	27.8	23.0	16.1	32.1	—	—
1960	44.3	27.8	23.7	16.5	—	—	—
1970	32.6	22.8	20.3	9.9	23.2	—	—
1975	26.2	18.3	15.7	7.9	16.8	11.4	26.9
1976	25.5	17.9	15.3	7.6	16.0	10.7	25.8
1977	23.6	16.1	13.5	7.6	15.6	10.1	23.5
1978	23.1	15.5	13.2	7.6	15.6	9.7	22.7
1979	21.8	14.3	12.1	7.5	14.8	9.0	21.1
1980	21.4	14.1	11.9	7.3	14.4	8.9	20.7
1981	20.0	13.4	11.4	6.6	13.8	8.2	19.4
1982	19.6	13.1	11.1	6.6	13.8	8.1	19.1
1983	19.2	12.4	10.6	6.8	13.5	7.7	18.2
1984	18.4	11.8	10.2	6.5	12.7	7.3	17.4

Source: National Center for Health Statistics, *Health, United States* (several issues). Washington, DC: Government Printing Office.

¹Infant mortality rate is number of deaths of infants under one year per 1,000 live births. Neonatal deaths occur within 28 days of birth; postneonatal deaths occur 28–365 days after birth. Deaths within seven days are early neonatal deaths.

²Number of deaths of foetuses of 20 weeks or more gestation per 1,000 live births plus foetal deaths.

³Number of foetal deaths of 28 weeks or more gestation per 1,000 live births plus late foetal deaths.

⁴Number of late foetal deaths plus infant deaths within seven days of birth per 1,000 live births plus late foetal deaths.

According to Marian Wright Edelman (1986), President of the Children's Defense Fund, when compared to white children, African-American children are twice as likely to be born prematurely, die during the first year of life, suffer low birthweight, have mothers who receive late or no prenatal care, be born to a teenage or unmarried parent, be unemployed as teenagers, have unemployed parents, and live in substandard housing. Furthermore, African-American children are three times more likely than whites to be poor, have their mothers die in childbirth, live in a female-headed family, be in foster care, and be placed in an educable mentally-retarded class. They are four times as likely to live with neither parent and be supervised by a child-welfare agency, five times as likely to be dependent on welfare, and eleven times as likely to live with a parent who never married (Edelman 1987).

Poverty is now inextricably associated with family structure (Hope 1981). During the 1970s, female-headed families became the majority of poor families with children. By 1980 the proportion was 56 per cent and the term 'feminization of poverty' began to appear in the literature. All other things being equal, if the proportion of the poor who are in female-headed families were to increase at the same rate as it did from 1967 to 1977, the in-poverty population would be composed solely of women and their children by about the year 2000 (Moynihan 1986:51). More than 25 per cent of

families with children in the United States were headed by a single parent in 1990. However, among African-American families, 56.2 per cent were headed by single parents compared to only 17.3 per cent for white families (Hacker 1992). To further illustrate this point, on the overrepresentation of female-headed families among the poor in the United States, it can be observed that 15 per cent of African-American male-headed families fell below federally established poverty levels in 1988 compared with 56 per cent of African-American female-headed families. For whites, the comparable figures were seven and 30 per cent. So, while poverty rates are very high among African-American families with an adult male present, African-American families headed by a woman are almost four times as likely to be poor than the African-American male-headed family.

Pearce and McAdoo (1981) have listed all of the possible personal and social sources of poverty, and point out that of these, about half – such as lack of education, inadequate skills, poor health, low work commitment, racism, lack of job opportunities – can apply equally to men and women. The other half apply to women only. Men generally do not become poor because of high rates of divorce and separation, increases in single-parenting, numerical imbalances between the sexes, sex-role socialization, or sexism (Pearce and McAdoo 1981:17; Rodgers 1987:407–411). The poverty of African-American women therefore has a distinct character.

One direct consequence of the feminization of poverty among African-American families has been an increase in the number of poor African-American children. As the percentage of African-American families headed by a woman has increased, poverty among African-American children has also worsened. The reason is that the rate of poverty for children in a family headed by an African-American woman is extremely high. It is much higher than for children in other families (Rodgers 1987:405). Children are the poorest group in the United States society. In 1988, more than one child out of five was poor and more than two-thirds (68.5%) of the children in African-American female-headed families were poor. A child in a female-headed family is four times more likely to be poor than a child in a male-headed or two-parent family (Children's Defense Fund 1985).

The increasing proportion of African-American families headed by women has aroused a great deal of concern in recent years. This concern has been aroused because of the social and behavioural factors contributing to such a phenomenon and the social and other consequences, resulting from such a phenomenon, that go well beyond the statistics already provided here. Those statistics merely underscore a complex social crisis that is shaking the African-American population in the United States.

During the past 30 years, female-headed households became increasingly common in the United States. Among African-American families, two factors seem to have been the primary contributors to such a situation (O'Hare et al. 1991; Hacker 1992). The first can be regarded as a sort of 'men's liberation'. More and more married African-American men now feel much freer to leave their families and start again. This can now be accomplished without negative social consequences and at very little economic cost. In the past, legal divorces were more difficult to obtain and both the African-American Churches and general community frowned on such family break-ups. The second factor, a woman's right and freedom to bear children, whether married or not, applies equally to African-American and white women. However, African-American women outnumber African-American men, at ages 20 to 49, ages when most people marry and start families. Consequently, fewer African-American women are getting married because there are not sufficient eligible men. Although there are, on average, 103 African-American males born for every 100 African-American females, the African-American male mortality rate is higher than that of females at every age. For the 20 to 49 age group, there are only 89 African-American men for every 100 African-American women in the United States (O'Hare et al. 1991).

Female-headed families generally have fewer economic resources than other families. The loss or lack of a male breadwinner creates or perpetuates poverty. In addition, parental control over children, once maintained by the presence of fathers, seems to have been eroded with the result being higher teenage pregnancy, crime, and school dropout rates (Hacker 1992). Being a school dropout, in turn imposes social disadvantages and maintains the vicious circle in which such people either were born or later found themselves.

No other absolute statistic expresses so eloquently the difference between an environment of sufficiency and an environment of deprivation as the difference between the infant mortality rate of African-Americans and whites. During the 1980s, the postneonatal mortality rates (deaths among infants aged 28 days to one year) averaged 3.3 per 1,000 live births of white babies. However, for African-American infants, the babies most likely to be born into poverty, the postneonatal rate averaged 6.6 per 1,000 live births for the same period. This was double the national rate.

On the basis of current trends, African-American infants are at a higher risk of death than white infants for all leading causes of death, including those causes that are unrelated to birthweight. African-American infants are twice as likely as white infants to die as a result of maternal complications of pregnancy and accidents. Their risk of death from pneumonia and influenza is three times as high. However, the most disturbing fact about the disparity of causes between African-American and white infant deaths is that most of the causes of death, for which African-American infants are at a higher risk, are considered preventable: preventable, that is, with proper and timely health care.

In privileged environments, most children who die before they are a year old are born with the condition that kills them: physical immaturity, a congenital deformity, a genetic disease, or a birth injury. The children of the poor have a large share of these problems too, but the impact of these handicaps is swamped by a tidal wave of malnutrition and infection. Malnutrition in the very young does not usually kill outright; rather it is an accessory to the crime, lowering resistance to infections and parasitic diseases that would not be life-threatening to a well-nourished child.

Just as undernutrition prepares the way for infection, disease undermines the nutritional status of the child. Sick babies often lose their appetite, so that food intake is reduced just when they need more nutrients than usual to fight off illness. Gastrointestinal diseases, among the most common afflictions of infancy, interfere with the absorption of nutrients from food. Children who are poorly fed to begin with may not have the chance to recover their nutritional losses from one bout of disease before they are struck with another. As mentioned before, the most tragic aspects of these deaths is that they are demonstrably preventable.

There is undoubtedly a direct relationship between rising poverty rates and rising infant mortality rates. Women and children at greatest risk of poverty seem to be the least likely to receive needed health care. During the 1980s, one in every ten infants born to African-American mothers was born to a woman who received either no prenatal care or none until the last three months of pregnancy. Among white babies, for the same period, four out of five were born to women who received early prenatal care and only one in 20 was born to a woman who had received late or no care (Hughes et al. 1986:5-6).

Prenatal care beginning early in pregnancy and continuing on a regular basis is important to the health of both mother and infant. Early prenatal care provides an opportunity to detect and treat medical and obstetric problems and to advise the mother regarding nutrition and hygiene, and against the use of hazardous products such as recreational drugs, cigarettes, and alcohol. Prenatal care can help prevent complications during pregnancy and labour. Also, there is a negative association between timing of prenatal care and low birthweight. Racial groups with higher frequencies of prenatal care visits tend to have lower incidences of low birthweight and vice versa (O'Hare et al. 1991:12-13).

The lower the birthweight, the greater the chances of death, serious congenital anomalies, or other severe impairments. Here again, African-Americans are disproportionately affected. That is, African-Americans are more than twice as likely as whites to have low birthweight (less than 2,500 grams) infants (Howze 1985-86:21; Manton, Patrick and Johnson 1987:185-187). In the 1980s, the proportion of infants born to African-American mothers and weighing less than 2,500 grams averaged 12.5 per cent compared to 5.6 per cent for infants born to white mothers (Hughes et al. 1989).

African-American infants in the United States die from preventable or curable conditions because they and their mothers get little or no medical care before, during, or after birth. Research has found that the outcome of pregnancy is directly related to the quantity and quality of prenatal care. By monitoring the condition of the mother and the developing foetus, trained observers can identify high-risk pregnancies and recommend appropriate interventions when necessary. For poor African-American women, prenatal care tends to be virtually nonexistent. Pregnant African-American women are less likely to receive prenatal care or more likely to receive it later in pregnancy than white women (Hacker 1992).

As mentioned before, child survival rates are considered to be the most sensitive indicator of a nation's health status. A high child survival rate would indicate a highly developed health-care system. Given that, it is difficult to understand why the African-American infant mortality rate is tolerated at a higher level than that of the white population in a highly developed country such as the United States (Rice and Jones 1982:198).

Undoubtedly, a reduction in the African-American child mortality rates is closely tied to health-care utilization. However, health-care utilization by children and pregnant women is closely tied to health insurance, without which they are less likely to receive needed health care. Some national studies have indicated that, despite their greater need for health services, poor African-American mothers and children actually receive less care. The lack of health insurance, in turn, is directly related to the circumstance of poverty and, hence, the inability to afford such insurance (Trevino and Moss 1983; O'Hare et al. 1991).

For poor African-American families, the lack of proper health care is a function of low income. A prerequisite for access to medical care is the ability to pay for such services. The median income for all African-American families is substantially lower than for white families resulting in less disposable income being available for the direct and indirect purchase of health care. The African-American family median income in the 1980s was 58 per cent of white family income. A 1982 survey conducted by the Robert Wood Johnson Foundation found that only about nine per cent of the United States' adult population under age 65 had no health insurance coverage of any kind. This percentage had held relatively constant since 1976 (Aday, Fleming and Anderson 1984). However, by the end of the 1980s, the proportion had almost doubled, increasing to 16 per cent (Ries 1991).

The predominant source of funding for health care for those under 65 years of age in the United States is employment-based third-party health insurance. However, because African-American groups tend to experience higher unemployment rates, fewer minorities have access to this kind of health insurance (US Department of Health and Human Services 1986, Vol. 2:295). In 1983, the Census Bureau, looking at all ages of the population of the United States, found 15.2 per cent of all persons not covered by either private or public health insurance. Fourteen per cent of whites lacked health insurance and 21.8 per cent of African-Americans. Inability to pay is the most commonly cited reason for not having health insurance (Trevino and Moss 1983; Craig 1991). More recently published data indicate no appreciable change from the 1983 estimates. This was also reported by Andersen et al. (1987) and Ries (1991).

Medicaid¹ has therefore emerged as an important source of health insurance for many African-Americans. The 1982 Robert Wood Johnson survey found that 20 per cent of African-Americans used Medicaid as their only source of health insurance (US Department of Health and Human Services 1986, Vol. I:190). In the late 1980s, four per cent of whites and 17.3 per cent of African-Americans were covered by Medicaid (National Center for Health Statistics 1986:202). This especially high Medicaid coverage rate for African-Americans can probably be attributed to two factors, the first being poverty, and the second being a greater percentage of these families headed by single women than other population groups, thereby increasing the likelihood of categorical Medicaid coverage through Aid to Families with Dependent Children (AFDC). However, although Medicaid has enabled many African-American families to have access to medical care, reimbursement schedules limit the range of available health services and frequent changes in program eligibility tend to disrupt the continuity of health care.

Having some form of health insurance is related to utilization of health services and to whether people report having a usual source of medical care. Twenty-five per cent of the medically uninsured report having no usual source of care compared to only 13 per cent of those covered by private insurance, 11 per cent of those covered by Medicare, and 15 per cent of those enrolled in Medicaid (US Department of Health and Human Services 1986, Vol. I:190).

The continuity of health insurance, generally defined as the proportion of the year a person is covered by health insurance, is related to employment status and to changes in Medicaid eligibility, and therefore has an impact upon health-care utilization. Greater proportions of African-American families are without insurance for some portion of the year than are the white population. Those with less continuity of health insurance use health services less frequently than those who are insured all year round (US Department of Health and Human Services 1986, Vol. I:190; Freeman et al. 1987).

Policy issues

Because child mortality is so closely linked and tied to broad economic and social conditions and to the complex interactions among them, specific interventions designed to improve a child's chances of survival may have a limited effect if they are pursued in isolation. The most decisive gains to be made in moving from high to moderate African-American child mortality rates involve improvements in the direct causes of death of African-American children. Clearly, policies that accomplish these goals will confer great benefits on the United States society as a whole. A reduction in the African-American infant mortality rates would not only further reduce the national infant mortality rates but would also result in the realization of a major humanitarian goal.

Some analysts, for example Rice and Jones (1985), have argued that to improve African-American health and eliminate or at least reduce health-care inequities, it is necessary to view health care as a civil-rights issue. They claim that the cumulative effect of racism over the years has produced significant socioeconomic differences between African-Americans and whites in, for example, income, education, housing, occupational status, and class. These factors, in turn, have a direct relationship to health care and health status. Furthermore, socioeconomic differences between African-Americans and

¹ Medicaid was launched in 1965 to replace a fragmented and grossly inadequate system of medical assistance to recipients of separate public assistance programs. It offers reimbursements to states for a portion of the medical costs of low-income persons. Each state administers and operates its own program, establishing its own rules consistent with federal guidelines. During the past decade, and particularly during the Reagan administration, Medicaid expenditures were scaled back by restricting coverage and benefits for working families near the poverty line. In recent years, however, the United States Congress has restored some of the federal funding to the Medicaid program but not to the levels that existed before 1980. Consequently, the working poor have fallen through the cracks in the system. They are not poor enough to qualify for Medicaid yet they lack sufficient funds to pay for the high costs of private health insurance coverage (Craig 1991).

whites have led to distinctions in perceptions of the importance of health care and use of health-care services. The significant disparity in overall income between African-Americans and whites is, perhaps, the most important variable responsible for the dual system of health care and the resultant African-American health-care inequities (Rice and Jones 1985:208).

The policy options for improving child survival rates and reducing inequities in health care among low-income African-American families seem to be clear-cut. However, the manner of implementation of these policy options is still being debated (Murray 1984; Moynihan 1986; Edelman 1987; Goggin 1987). Basically, the policy options revolve around the need to improve the utilization of and access to health-care services, reduce the disparity in health insurance coverage, and increase the availability of appropriate health-education materials and information.

It is essential to improve access to, and use of, health-care services. Federal, state, and local governments must, individually and collectively, provide for the health care of all United States' citizens, more particularly for the low-income African-Americans and especially for pregnant low-income women and their children. Such an advocacy does not preclude the role of African-American individuals to act on their own behalf and in their best interest in these matters. I somewhat agree with Loury (1984) that

It is now virtually beyond dispute that many of the problems of contemporary Afro-Americans lie beyond the reach of effective government action and require, for their successful resolution, actions that can only be undertaken by the black community (pp.6–7).

However, as Moynihan (1986) has pointed out, this is an elementary fact that applies to all ethnic groups at all times. The problem here is that we are discussing a historically disadvantaged group that will remain historically disadvantaged if policies do nothing more than promote private initiative and private consumption, despite their merits in other circumstances, and as Murray (1984) would prefer to have it. Policies must instead be concentrated on the removal of the root conditions that create and maintain socio-economic inequities among ethnic groups in the United States (Hope 1983:32–33). Consequently, it is both banal and erroneous to charge that those who advocate a role for government in social policy are 'bleeding-heart liberals' who ignore the responsibility of the individual.

Getting back to the central issue, improving health-care access and utilization will improve prenatal care which in turn will save the lives of thousands of African-American infants and prevent low birthweight and needless birth defects. It was estimated that if current trends were permitted to continue, between now and the mid-1990s, 16,500 babies would die in the United States, primarily because they were born too small to survive (Hughes et al. 1986). At least one in nine or 1,800 infant deaths could be prevented simply by ensuring that their mothers received early and comprehensive prenatal care (Hughes et al. 1986). Moreover, prenatal care while saving lives will also save money. For every dollar spent on prenatal care, three dollars are saved in hospitalization costs (McManus 1984:47). The average estimated cost for required medical services, in the 1980s, for each low birthweight infant was \$15,000 (US Department of Health and Human Services 1986, Vol. I:14). This means that the total cost for medical services for low birthweight African-American infants averaged \$192,000 per 100 total live births while for white infants it was \$85,500 per 100 total live births. Finally, with respect to access to prenatal care, it will certainly be a way of reaching pregnant teenagers and teenage mothers. Teenage pregnancy has important implications for both the mother and the infant. Teenage mothers are more likely to be unmarried, have less prenatal care, and have a larger percentage of low birthweight infants than older mothers. In the 1980s, the percentage of live births to teenage mothers averaged 12 per cent for white mothers and 25 per cent for African-American teenage mothers.

The next policy issue has to do with reducing the disparity in health insurance coverage. The United States continues to be the only major industrial nation without a comprehensive national health-insurance plan. This probably explains, to some significant degree, the problem with respect to access and utilization of health care among the poor and particularly the African-American poor. The consequence of that situation is, of course, lower child survival rates and larger percentages of babies born with low birthweight and other health problems. Many of the African-American families tend to rely on Medicaid and charity for their health-care needs because they have no other source of care or ways to finance it. However, there are also limitations with respect to the range of coverage in the Medicaid program. Given these Medicaid limitations and the probability that Congress is not likely to enact legislation for a comprehensive national health-insurance plan in the very near future, then the only other alternative is to provide for income support for the poor to enable them to acquire either private insurance or the ability to pay for their health-care services.

On another level, and over the long term, there is some agreement with the suggestion of Rosenbaum and Johnson (1986) that the state governments might consider establishing a program to provide publicly-subsidized insurance coverage for poor working families. Such programs would allow poor families to buy insurance coverage on an income-adjusted, sliding premium basis (Lewin and Lewin 1987:51). This strategy would provide health insurance to workers while reducing the disincentives whereby workers earning too much lose all Medicaid support (Wilensky 1987:43). It is recognized, however, that both the political support and the fiscal wherewithal may be unobtainable, in the near future, for such a policy reform, given the current fiscal crisis affecting the state governments.

Finally, let us consider the policy issue of health information and education. Health education is an effective means of increasing public awareness about actions which individuals and communities can take to improve personal health. Since many of the factors associated with African-American infant mortality can be controlled, then much more work is needed to educate African-American populations on the health risks and hazards associated with childbirth and teenage pregnancy. Additionally, health education and information let individuals and families become aware of the existence of health services so they can increase their use of those services and educate themselves on the proper use of medication and the significance of continued health care both before and after childbirth. In this regard, there is a pressing need for greater outreach programs conducted primarily in low-income neighbourhoods in familiar surroundings such as community centres or the local health clinic or even in the churches or schools (Edelman 1987).

Health-education campaigns provide needed information and thus enhance personal autonomy in the face of health risks. They seek to reduce or eliminate behaviour that produces health-related burdens for individuals, families, and society. Therefore, these campaigns have the capacity to limit the extent to which the community as a whole may be compelled to accept the negative externalities generated by those individuals and families who, knowingly or unknowingly, contribute to infant mortality. Moreover, as suggested by Bayer and Moreno (1986), health-education campaigns would represent a public expression and demonstration, at both the official and non-official levels, of the concern for the health and well-being of members of the society.

Conclusions

Differing patterns of health services utilization, health-insurance coverage, access to health providers, and the availability of appropriate health-education materials and programs contribute to the disparity in health status between African-American and white populations in the United States. However, it seems that the most significant variable limiting access to proper health care, among African-American populations, is low income. If poverty results in the lack of health care then children will die in the shadow of the most modern hospitals.

The United States, if only both to insure and ensure its economic future, must accept that the children of the poor are as important economically as the children of the non-poor. If for no other reason, the United States should invest in social programs for children because such programs produce long-term savings that more than offset short-term costs. The destiny of any nation is tied to the destiny of its children; all of them. Investing money in health care improves the rates of child survival and decreases the rates of low birthweight. There are huge savings in the cost of medical care after birth, and of institutional care for some of the babies who would otherwise have been born handicapped.

The primary problem underlying the health-care access of the African-American poor is that there is neither a system of universal entitlement that ties their health care in with the rest of the population nor an explicit and comprehensive strategy for care of poor African-Americans outside of the dominant private system. Research has shown that the uninsured systematically use less medical care than the insured population, and that they are less likely to seek care when sick. This means that more African-American children than white children will continue to die because of lack of access to prenatal and postnatal health care. Broadening the reach of health insurance is therefore regarded by many as one way to improve access to health care by the poor (Reinhardt 1987). However, much needs to be done in terms of who pays and the method for determining how much is paid. Over the short run, significant initiatives will probably have to originate at the state and local government levels. In the longer run, there would need to be some direct federal involvement in the provision of national health insurance that either automatically covers every citizen of the United States or covers those United States citizens without adequate private health insurance.

References

- Aday, L., G. Fleming and R. Andersen. 1984. *Access to Medical Care in the United States: Who Has It, Who Doesn't*. Chicago: Pluribus Press.
- Andersen, R., M. Chen, L. Aday and L. Cornelius. 1987. Health status and medical care utilization. *Health Affairs* 5 (Summer): 136–156.
- Bayer, R. and J.D. Moreno. 1986. Health promotion: ethical and social dilemmas of government policy. *Health Affairs* 5 (Summer): 72–85.
- Children's Defense Fund. 1985. *Black and White Children in America: Key Facts*. Washington, DC.
- Craig, Laurence A. 1991. *Health of Nations: An International Perspective on U.S. Health Care Reform*. Washington, DC: The Wyatt Company.
- Edelman, M.W. 1986. Save the children. *Ebony* (August): 53–56, 58.
- Edelman, M.W. 1987. *Families in Peril: An Agenda for Social Change*. Cambridge, Mass.: Harvard University Press.
- Farley, R. and W.R. Allen. 1987. *The Color Line and the Quality of Life in America*. New York: Russell Sage Foundation.
- Freeman, H.E., R.J. Blendon, L.A. Aiken, S. Sudman, C.F. Mullinix and C.R. Corey. 1987. Americans report on their access to health care. *Health Affairs* 6 (Spring): 6–18.
- Goggin, L. 1987. *Policy Design and the Politics of Implementation: The Case of Child Health Care in the American States*. Knoxville: University of Tennessee Press.
- Hacker, A. 1992. *Two Nations: Black and White, Separate, Hostile, Unequal*. New York: Charles Scribner's.
- Hope, K.R. 1981. Poverty in rural America: an analytical view of the dilemma. *Economic Analysis and Workers' Management* 15(2): 177–195.
- Hope, K.R. 1983. Urban development and social change: a conceptual analysis of an American dilemma. *Habitat International* 7(3/4): 31–36.

- Howze, D.C. 1985–86. The black infant mortality rate: an unequal chance for life. *Urban League Review* 9 (Winter): 20–25.
- Hughes, D., K. Johnson, S. Rosenbaum and J. Liu. 1989. *The Health of America's Children: Maternal and Child Health Data Book*. Washington, DC: Children's Defense Fund.
- Hughes, D., K. Johnson, J. Simons and S. Rosenbaum. 1986. *Maternal and Child Health Data Book: The Health of America's Children*. Washington, DC: Children's Defense Fund.
- Lewin, L.S. and M.E. Lewin. 1987. Financing charity care in an era of competition. *Health Affairs* 6 (Spring): 47–60.
- Loury, G.C. 1984. Moral leadership in the black community. In *Black Leadership: Two Lectures in the Arthur Lewis Lecture Series*. Princeton: Princeton Urban and Regional Research Center.
- Manton, K.G., C.H. Patrick and K.W. Johnson. 1987. Health differentials between blacks and whites: recent trends in mortality and morbidity. *The Milbank Quarterly* 65, Supplement 1: 185–187.
- McManus, M. 1984. The role of Medicaid in delivering prenatal care to low income women. In *Infant Mortality Rates: The Failure to Close the Black-White Gap*. Hearings Before the Subcommittee on Oversight and Investigations and the Subcommittee on Health and the Environment of the Committee on Commerce, 98th Congress, Second Session. Washington DC: Government Printing Office.
- Monmaney, T., M. Hager, K. Springen, and L. Drew. 1987. A black health crisis: shorter life spans and higher death rates. *Newsweek*, July 13: 53–54.
- Mosley, W.H. and P. Cowley. 1991. The challenge of world health. *Population Bulletin* 46 (December): 2–36.
- Moynihhan, D.P. 1986. *Family and Nation*. New York: Harcourt Brace Jovanovich.
- Murray, C. 1984. *Losing Ground: American Social Policy, 1950–1980*. New York: Basic Books.
- National Center for Health Statistics. 1986. *Health, United States, 1986*. Washington, DC: Government Printing Office.
- National Commission to Prevent Infant Mortality. 1988. *Death Before Life: The Tragedy of Infant Mortality*. Washington, DC.
- O'Hare, W.P., K.M. Pollard, T.L. Mann and M.M. Kent. 1991. African Americans in the 1990s. *Population Bulletin* 46 (July): 1–39.
- Pearce, D. and H. McAdoo. 1981. *Women and Children: Alone and in Poverty*. Washington, DC: Center for National Policy Review.
- Reinhardt, U.E. 1987. Health insurance for the nation's poor. *Health Affairs* 6 (Spring): 101–112.
- Rice, M.F. and W. Jones, Jr. 1982. Black health inequities and the American health care system. *Health Policy and Education* 3 (Fall): 195–214.
- Rice, M.F. and W. Jones, Jr. 1985. Health care, public policy and the courts: black health status as a civil rights issue. *Health Policy* 5: 207–221.
- Ries, P. 1991. Characteristics of persons with and without health care coverage: United States, 1989. *NCHS Advance Data*, Np. 201, May 16, Table 1.
- Rodgers, H.R. 1987. Black Americans and the feminization of poverty: the intervening effects of unemployment. *Journal of Black Studies* 17 (June): 402–417.
- Rosenbaum, S. and K. Johnson. 1986. Providing health care for low-income children: reconciling child health goals with child health financing realities. *The Milbank Quarterly* 64(3): 442–478.
- Trevino, F. and A. Moss. 1983. Health insurance coverage and physician visits among Hispanic and non-Hispanic people. In National Center for Health Statistics, *Health, United States, 1983*. Washington, DC: US Government Printing Office.

US Government, Department of Health and Human Services. 1986. *Report of the Secretary's Task Force on Black and Minority Health* (Eight Volumes). Washington, DC.

Wilensky, G.R. 1987. Viable strategies for dealing with the uninsured. *Health Affairs* 6 (Spring): 33–46.

Child mortality in new industrial localities and opportunities for change: a survey in an Indian steel town*



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Abstract

As Asia becomes increasingly urbanized the effect of new industrial development on child mortality becomes of increasing interest. In India, considerable investment has been made in the social infrastructure of industrial new towns. This survey of Durgapur steel town in West Bengal shows that although the average level of child mortality in the working class population is favourable in comparison with other Indian cities, considerable differentials, that can be related to social, economic and environmental differences within the population, have arisen since the creation of the city in the late 1950s. The paper argues that the undertaking of selective sanitary interventions to improve access to drinking water (in particular) would be administratively feasible in these industrial new towns, of immediate impact, and indeed necessary if the differentials in mortality are to be eliminated.

Introduction and objectives of the study

As Asia becomes increasingly urbanized, demographers and social scientists interested in policy need to focus their attention on the mortality characteristics of populations living in towns and cities, and the impact of the latter on their citizens' health. Although some studies have been undertaken on health and mortality in the metropolitan cities in the region, such as Hongkong (Goldman 1980), Shanghai (Jiang and Karkal 1981), Manila (Basta 1982) and Bombay (Ramasubban and Crook 1985), very little work has been done on the towns and cities of the next rank in population size, say between 100,000 and 1,000,000. Yet since the 1950s there has been a very substantial growth of new industrial complexes often located outside the metropolitan regions, giving rise to rapidly growing and by now very large urban settlements, sometimes styled 'new-towns'.

An example of such growth can be seen in the 'steel-towns' of India, three of which date from the late 1950s when the country was embarking on a strategy of establishing heavy industry largely sponsored by the public sector. These towns are Bhilai in Madhya Pradesh, Raurkela in Orissa, and Durgapur in West Bengal; the last is the subject of this paper. All three were new-towns, built on green-field sites, and have now experienced about 35 years of growth, some of which has been very rapid. Durgapur, the least of the three in size, had a population of 415,986 at the last Census count in

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1991. Elsewhere in the developing world similar cities have mushroomed from the establishment of a single heavy industry, where, as in the case of steel, plant size is subject to huge economies of scale; the steel-towns of Maanshan in China (Qichang n.d.) and Chimbote in Peru (Pryer and Crook 1988) are examples geographically far apart, but sharing certain demographic characteristics, such as a period of initially very rapid demographic growth and a concentration of young adults in their populations, most of whom are migrants. In India the creation of new industrial towns is still taking place: the port and steel-city of Vizakhapatnam in Andhra Pradesh is the most recent example, with a 1991 population of 1,051,915. It is an appropriate time to ask certain demographic questions regarding industrial cities of this kind. Is fertility falling faster here than in other cities? Is health improving more rapidly? Are the differentials in fertility and mortality lower than elsewhere? Are the social and physical environments of industrial new-towns associated with better health and lower fertility than in other towns, or not?¹

This paper will focus on aspects of mortality. We take as a working hypothesis that the state is able to intervene to lower mortality levels in cities in that the provision of clean water and good sanitation can help towards that end; so can clean air and adequate shelter. In theory the State can have considerable control over the supply of these amenities, but not, of course, without cost. In mature urban environments much of the population is usually without such amenities: 30 to 40 per cent of the population in India's metropolitan cities is designated as living in slums on this account. This is because in the past the State was either not willing to meet the cost, or not able to keep up with the increasing need, or a combination of both. To make up the backlog today in the older metropolitan cities is obviously a mammoth task which would use a prohibitive quantity of resources if attempted in a short space of time. But in newly built urban environments a more successful attempt could have been made to keep up with the need for the provision of amenities, especially when much land had been obtained in advance, as in the Indian steel towns. Insofar as mortality differentials depend on differential access to these amenities, it should have been possible to achieve relatively low mortality differentials in these towns. One aim of this study is to see whether this has indeed been the case. Another is to ascertain the potential for this to be achieved in the future.

India's crude death rate was estimated at 7.7 per thousand in the urban areas for 1980-1982 (Government of India 1988b). The corresponding infant mortality rate (IMR) was 64 per thousand live births. In the State of West Bengal, where Durgapur is situated, mortality is believed to be rather lower than the national average, with a crude urban death rate of 6.7 for 1980-1982, and infant mortality rate of 48 for 1983, the closest available date to the 1981 Census. There are a few estimates for some of the metropolitan cities alone in India, for instance Bombay, where the registered crude death rate was 8.6 (IMR of 61) in 1981, and Calcutta, where an infant mortality rate of 52 was estimated from mortality questions asked at the 1981 Census (Government of India 1988a); the latter is probably an underestimate, resulting from the use of an inappropriate model life-table.²

One of our objectives in this study is to provide an estimate of mortality for a non-metropolitan city with a heavy industrial economic base, so that we may begin to obtain a picture of mortality

¹ One of the authors has examined various other demographic characteristics of such towns from census materials (Crook 1992).

² This critical observation was made to us by Tim Dyson. It should be noted, for example, that the estimated infant mortality from this source for Bombay is about 15 per cent lower than the registered rate, itself likely to be an undercount.

differences in Asia across urban areas of differing economic character.³ A second and more important objective is to indicate the differences in mortality that exist within such cities, and their social or environmental determinants, to add to the still modest literature on intra-urban mortality differences in developing countries: for example, Behm (1980); Tekce and Shorter (1984); Bisharat and Tewfik (1985); de Lima Guimaraes and Fischmann (1985); and Basu and Basu (1991). For the determinants we are particularly concerned to obtain and use measures of physical environmental quality (as indicated in access to sanitary facilities, for example), as well as household socioeconomic measures, and, insofar as sample size allows, to model their independent effects on child survival. It will be particularly important to see how far differentials of this kind have been contained in cities that were planned from scratch, so to speak, with large investment outlays on infrastructure and housing. It has been documented that such new-towns have accumulated a substantially 'unplanned' population over time, partly because the local resources expected to be generated for ongoing social infrastructural development failed to materialize, and partly because the speed of demographic growth was grossly underestimated (Sivaramakrishnan 1982; Jagannathan 1987; Crook 1992). Nonetheless, such cities are still sometimes regarded as being economically privileged, as indeed they once were, and most development aid is still focused on the older metropolitan areas ostensibly because their need is greater.

In this study we seek to establish whether or not there are mortality differences that can be attributed to the unequal provision of social infrastructure for different social strata in new-towns, despite the initial commitment to social equality in this respect.

Our survey design

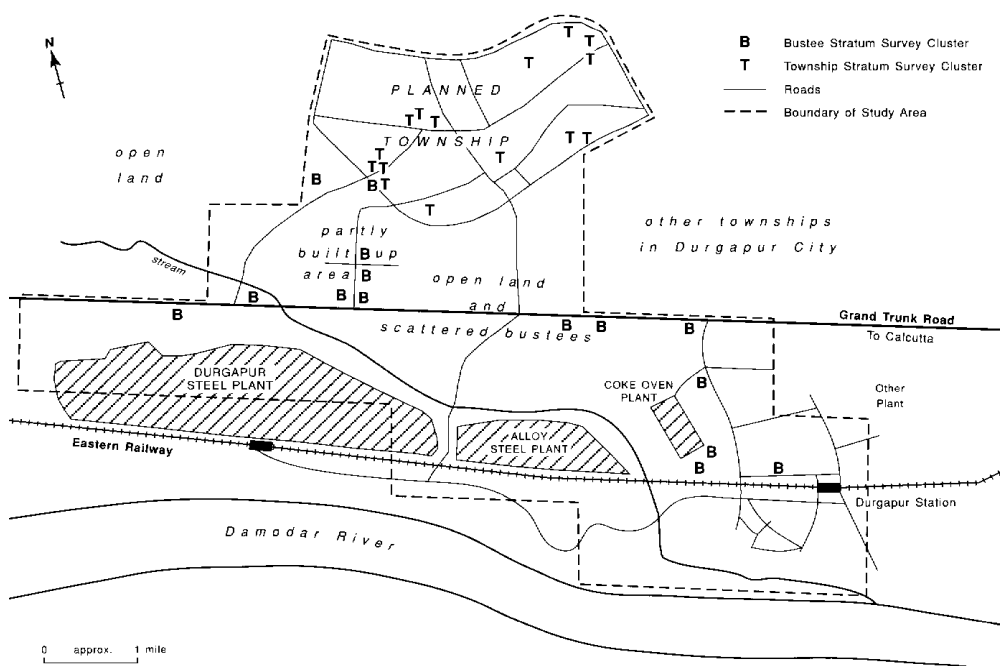
For the purposes of this study we sampled 1,500 households in Durgapur. Our universe consisted of those households living in 'working-class housing' in the area of the city that included the steel works and their environs, the official Steel Township, and the area in between, totalling about two-thirds of the geographical area of the city (see Figure 1). Our sample was stratified into two equal parts: those dwelling in official low-grade housing in the built-up Steel Township area, which we will call simply 'the township', numbering 750 households; and those living in the spontaneous housing areas of hutment type, known locally as *bustees*, a term we adopt in this paper, also numbering 750 households. The stratification was disproportionate, as the true ratio between the sectors is believed to be closer to 2:1 than 1:1 respectively. Sampling units were clusters of 50 contiguous households, the units being drawn randomly from a cartographic sampling frame that we created ourselves, by covering the 30 square miles of our universe on foot.

It is important to appreciate the 'flavour' of an industrial new-town of this kind. The planned township consists of a mixture of tiny semi-detached bungalows and of flats in two or three-storey blocks for the occupational groups included in our study, which range from shop-floor supervisors to sweepers. Each household has its own private toilet and water tap, regardless of the occupational group for which it is intended. The township is built to high standards of space and environmental quality, with broad tree-lined roadways, green areas for recreation and good drainage and lighting; it is in a slightly elevated location two to three miles distant from the steel plant, though it is frequently downwind of the smoke stacks (see Figure 1). The *bustees* on the other hand are scattered over much of the remaining area and consist of large groups of huts that range from the occasionally well-built brick building to tent-like structures of bamboo mats and thatch. Households have mainly shared access to water (taps and wells) and to makeshift toilets outside their dwelling areas, in each case only about 25

³ The authors have attempted a similar exercise for the State of West Bengal using the widowhood data from the 1981 Census to provide an indication of adult mortality differentials across the urban areas of the state (Malaker and Crook 1989).

per cent of households having their own facility within their own compound. The *bustees* are separated by substantial tracts of open space, some of which is used for rough grazing, the lower-lying areas containing ponds and streams (see Figure 1). The relative spaciousness is typical of new-town areas where much land was acquired for developments that never followed. The *bustees* are on the whole closer to the source of industrial air pollution, and in this region of India generate their own pollution through the domestic burning of soft coal.

Figure 1
Sketch map indicating localities surveyed in Durgapur



The questionnaire we administered after a ten per cent pre-test was kept short and simple. We obtained detailed information on the occupational structure of the household, which we take on the whole to be an index of potential income. For the determinants of mortality analysis that follows we found it useful to use two broad categories of occupation: first, skilled labour and supervisory positions, and secondly, unskilled production and service-sector occupations, which we refer to as higher and lower respectively. When analysing the households in the *bustees* alone, we divided occupations into production labour and supervisory positions, and unskilled service and trades occupations. We recorded the physical characteristics of the house, and the household's access to water and toilet facilities.

In the analysis that follows, the most frequent distinction was made between having access to facilities in the immediate surroundings or compound belonging to the household, and having to go further afield, to a community well or latrine or into the open land beyond the settlement. We also enquired of the levels of maternal education. The mortality estimates were derived from the 'Brass questions' on how many children were born and how many are still alive, along with information on age of mother and marital duration, classified in five-year groups in each case. Birth histories were also

collected which enabled a consistency check with the replies to the Brass questions to be carried out on the spot.

Mortality estimates and differentials

We use the data derived from the Brass questions to estimate $q(2)$, $q(3)$ and $q(5)$ and thence to obtain estimates of infant mortality classified by the stratified localities and the risk factors described above. In most cases $q(3)$ and $q(5)$ were the most consistent estimators and we use the West model life-table in the Coale-Demeny series to obtain the life-table measures reported here. We are aware that fertility and mortality have probably been declining in this population; the former effect we cannot counter, the latter is allowed for by taking our estimates to refer to a period a few years before the survey, which was carried out late in 1988.

For the township stratum we obtain an estimate for the infant mortality rate (IMR) of 46; for the *bustee* stratum the IMR is 79 (Table 1). If we were to combine the strata with weights thought to be appropriate to the household residential distribution within the city we would obtain an IMR estimate of 54 for the 'working-class' population as a whole, which is not much higher than that obtained for Calcutta at the 1981 Census (IMR=52), the latter, however, representing the whole occupational spectrum. It is clear that the workforce living in the township sector is to some extent 'privileged' among the Indian working class. But there is also a considerable differential between those in the 'planned' and those in the 'unplanned' residential sectors.

The largest difference occurs between the two broad occupational groups, with infant mortality in the higher at 30 and 83 in the lower (see Table 1). Next in importance are mortality differences according to an index of adult female education, with an IMR of 83 for the children with illiterate or barely literate mothers in the household, and 43 for the rest. Access to toilet and to drinking water also correlate with mortality differentials, although of a smaller magnitude, close access to toilet giving an IMR of 68 versus 96 with less close access, and for drinking water 61 versus 88.

Table 1
Estimates of infant mortality according to selected social and environmental characteristics of the sample households

Characteristic		IMR	Difference in IMR between each level of characteristic
Locality:	Township	46.2	—
	<i>Bustee</i>	79.4	33.2
Occupation of head:	Higher (skilled and above)	30.4	—
	Lower	83.2	52.8
Access to drinking water:	Inside	60.8	—
	Outside	87.9	27.1
Access to toilet:	Inside	67.5	—
	Outside	96.5	29.0
Construction of dwelling:	Substantial (brick wall)	72.9	—
	Insubstantial	83.2	10.3
Education of mother:	Higher (completed primary)	43.1	—
	Lower	83.2	40.1

Duration of residence:	Up to 15 years	64.0	—
	15 and up to 25	60.8	3.2
	25 and over	56.5	4.3

Access is not the only desirable consideration in the provision of drinking water. Our preliminary analysis distinguished between tap water (from mains supply) to which 54 per cent of *bustee* households have access, and all other sources, consisting chiefly of well water only some of which is tube-well. We found very little difference in our mortality estimates in this analysis; in fact tap water was coincident with slightly higher mortality. Clearly tap water is only as good as the purification system that supplies it, and we were told informally by a local health statistician (before we made the analysis) that in Durgapur this left something to be desired. We also attempted to find mortality differentials according to the quality of the construction of the individual dwellings, distinguishing those that were brick-built, about 40 per cent of *bustee* dwellings, from those of less durable construction: here the difference in mortality was small (IMR of 73 and 83 respectively), a finding consistent with work done by one of the authors in Pune (Bapat, Crook and Malaker 1988). The general quality of the environment within the dwelling is probably best measured by the dampness of the dwelling, and the quality of construction of the floor, that is, whether paved or not, is probably a better indicator of this: a point we had not appreciated at the time of designing this study, but which we now think is worth further research. It should be remembered that the quality of the floor may have a direct impact on the health of young children as they are often left to crawl upon it (see also Al-Mazrou and Farid 1991).

One has to be careful with the interpretation of economic and environmental risk factors when dealing with a rapidly growing urban population. Most of this population will have migrated to the locality at some time in their lives, changing their occupation and physical environment thereby. However, the migration rate during the 1980s had become quite low, and only four per cent of our sample households had arrived within the five years preceding the survey. Hence virtually all the experience of the children we study had occurred within the city.

Social and environmental factors in child mortality

We now investigate the independent contribution of some of the factors described above toward child survival in Durgapur, using a small number of linear models, estimated by ordinary least-squares regression (Table 2). We use as the dependent variable the ratio of observed to expected proportion of children dying from children ever-born to mothers classified by duration of marriage. The model is described in Farah and Preston (1982). In our presentation in Table 2 we take as the 'base value' the estimated children dying from children ever-born (to women of all durations of marriage up to 20 years) given the lowest or most adverse category of the social and environmental variables taken together, for instance, outside water supply, unskilled parental occupation and no maternal education. Raising the level of one particular variable, for instance, from outside to inside water supply, while keeping the others controlled at their lowest level, is expected to reduce the proportion of children dying by a certain proportion. For ease of interpretation these proportions are presented in the tables, having been calculated from the original regressions in which the dependent variable was the ratio of observed to expected as described in the text above.

The first two models use data from the combined sample of township and *bustee* (Table 2), that is for 2045 births. The dominating effect of occupation is clear and significant, reducing the proportions

dead by about four per cent from a base value of 13 per cent.⁴ Occupation is closely allied to income (which in itself is often difficult to measure accurately), and hence determines purchasing power over food and medical supplies; in the context of an industrial city it may also determine access to medical care, the industrial workers at the steel plant having their own hospital in the township and a medical insurance scheme. The second model explores the proposition that factory employment may itself confer benefits of this kind, which are not adequately picked up by the category of occupation since this does not distinguish between self-employment, small-workshop employment, and employment in major industrial plant. This is an important distinction in new industrial towns where large-scale factory employment is a major characteristic such as in the Durgapur Steel Plant; 60 per cent of the workers in our sample were employed in factories, and even in the *bustee* households about one third of the workers were factory workers. The estimated independent effect of the industrial category is small but statistically significant, and its value may be understated owing to collinearity with occupation.

The effect of the broader environment as indicated by locality of residence (township or *bustee*), which probably encapsulates a combination of sanitary facilities, drainage, and also air quality, has an unexpected sign and is insignificant. There is a problem in that it correlates with access to drinking water since all the township houses have inside supplies, and it was subsequently dropped from the analysis. However, taken by itself, the close access to drinking water, whether from tap or well, is important, reducing the proportions dying by three to four per cent, a significant contribution. Generally speaking a similar picture emerges if we restrict our analysis to the *bustee* stratum only, about two-thirds of the total births, as in the third model illustrated. The independent effect of occupation is maintained, indeed enlarged. In the *bustees*, access to drinking water still contributes about four per cent to the reduction in mortality, still a significant effect; access to toilet however contributes very little, about one per cent.

Table 2
Models showing estimated social and environmental effects on child mortality

Model	Base value of percentage dead	Decrease in mortality due to change in value of categorical variable from 0 to 1				
Total sample						
1	13.46	LOC +2.06	OCC -4.03*	ED -3.40*	DW -4.27*	TOI -1.18
2	13.70	FAC -0.55*	OCC -3.80*	ED -3.09*	DW -3.40*	
Bustee sample						
3	13.70		OCC -4.91*	ED -4.12*	DW -4.20*	TOI -0.71

Note: * significant at 5 per cent or below. LOC: location in *bustee* (0) or township (1). OCC: main occupation in household; lower skill (0), higher skill (1). ED: education of mother; lower (0), higher (1). DW: access to drinking water; further away (0), nearby (1). TOI: access to toilet; further away (0), nearby (1). FAC: industrial category of occupation; non-factory (0), factory (1). All variables are explained more fully in the text.

⁴ Although we will report significance levels at the familiar five per cent cut-off, we are aware that any cluster-sampling design is likely to vitiate to some extent the principles of pure random sampling. However, from personal observation during the pilot stage we doubt whether the heterogeneity within most of the 50 clusters was much less than in the relevant stratum as a whole.

There is clearly more to be learnt here that only an in-depth observation of household behaviour could adequately reveal. Does closeness of access to water improve quantity available, for instance? Does it reduce the risk of contamination through long periods of storage or distance of transportation? There may be a seasonal dimension to this argument as in some *bustees* water supply runs dry at certain times of the year, and these may be those where water points are provided less frequently.⁵ We feel this variable is describing availability rather than quality. In the Durgapur *bustees* the coincidence of access to toilets and to water is not particularly high at the household level: one-third of households have close access to one facility but not to the other. The independent contribution of sanitary facilities to child survival in urban areas has not been investigated in much empirical research elsewhere. An important exception is the study of squatter settlements in Jordan by Tekce and Shorter (1984), where the quality of construction of the individual dwelling was believed to be a good proxy for the sanitary facilities provided (*inter alia*). This is not the case in Durgapur where 25 per cent of the *bustee* dwellings were of substantial construction but had poor access to water, and 17 per cent were of poor construction but had good access to water. In both studies the relevant variable has been shown to be independent of variables representing income and occupation in its contribution to survival.

The education of adult women in the household (to primary level and above) is also relatively important in both the total and *bustee* samples subtracting three to four per cent from the proportions dead. Much empirical work has still to be done to disentangle the various implications of this variable, which may include improved female status and bargaining power over household resources, enhanced awareness of potential control over life and death, explicit knowledge of hygiene, and the interaction of any of these. It should be noted, however, that our models indicate that maternal education is not sufficient to ensure high survival levels of children so long as serious economic and environmental constraints exist. For if it were sufficient, the effect of the access to water and sanitation would disappear once we had controlled for maternal education effects; but it does not.

Combining the three dimensions among the factors determining child survival, namely occupation, sanitation, and education, we are able to detect three important and statistically independent effects in the best model our data can support after eliminating all insignificant variables (Table 2, model 2). The main household occupation, usually the father's, together with the industrial classification of that occupation, closeness of access to drinking water, and maternal education are all significant in the explanation of child mortality. Essentially the same model results hold in the *bustee* sector taken separately also. We were not able to detect any significant interactions between these variables.

Table 3

Observed and estimated values of child mortality (per thousand births) according to principal occupation, education of mother and access to drinking water in the household (controlling for duration of marriage)

Occupation	Higher education		Lower education	
	Inside access	Outside access	Inside access	Outside access
Higher				
Observed	29	64	26	21
Estimated	24	60	58	94
	(579)	(78)	(77)	(48)
Lower				
Observed	53	95	96	129

⁵ This observation was made to us by Jaysari Raychaudhuri from her own research experience in Durgapur.

Estimated	61 (209)	97 (201)	95 (260)	131 (583)
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Note: number of births in brackets

How well do these rather simple models characterize the conditions that determine child mortality in a new industrial city in a developing country? We leave the reader to judge by indicating, as an example, in Table 3 the observed and the modelled values in a three-variable model presented for the whole sample. This way one can see precisely where the model is least successful. Our feeling is that the overall fit is rather satisfactory, the model being useful enough, that is to say, for informing policy discussion. The worst predictions occur for the high occupational groups with low female education in the household, which come from two of the three estimates based on less than 100 births. As these are relatively small proportions of the population, and relatively privileged in some respects already, the policy implications are arguably less important anyway.

Discussion and conclusions

This study confirms that the average level of child mortality may be quite low in a modern industrial city in a developing country, even among the working-class population, if a substantial proportion has been well-housed in planned townships. In terms of life expectancy this steel town's working population could be expected to live 63 years in the early 1980s. The infant mortality rate compares favourably with that for the whole population in the metropolitan city of Bombay, and was lower than that in some of the working-class wards of that city (Ramasubban and Crook 1985). To that extent we may support the proposition that new industrial towns are advantaged over old industrial and commercial urban localities. This conclusion compares well with that of another study undertaken by the authors which provided estimates of mortality from widowhood data for each district in the state of West Bengal (Malaker and Crook 1989). When those districts were ranked according to mortality in their urban sectors only, we found that Bardhaman District where Durgapur is situated, constituting about one-third of the district's urban population, had the lowest child mortality. Exactly the same was shown by the estimates made by the Office of the Registrar General from the questions on children ever-born and surviving asked at the 1981 Census (Government of India 1988a). In both studies metropolitan Calcutta and its contiguous districts had higher mortality than the urban areas of Bardhaman.

However, the differences in mortality between the planned and unplanned sectors of the city are such as to make the summary description of new industrial towns as 'privileged', or at the forefront of a new health era, somewhat inappropriate. The infant mortality rate is nearly doubled as one moves from the planned township area to the spontaneous *bustees*, going from 46 to 79 per thousand; as we pointed out above the population in the *bustees* constitutes about one-third of the total in Durgapur. This is a gap comparable with metropolitan Bombay's, where infant mortality varied from 46 to 87 per thousand between the best and the worst wards at about the same date. Clearly the advantage of being able to plan the city from scratch in the post-Independence era has not been sufficient to contain the spread of the mortality differentials.

These mortality differentials can be attributed both to the different socioeconomic characteristics of households and to the different level of amenities provided for them in this steel town. The effects of these characteristics have been shown to be largely independent. This is a useful finding in the context of a new industrial city over which the State has substantial control and where land is still quite readily available since it implies that immediate and practical interventions in specific directions might be effective in closing the mortality gap. There are other factors, however, where the State's involvement is likely to occur only over the long run and with less specific targeting: we refer to policies that will

ultimately raise incomes and educational levels. Occupational structure in an Indian city is not within the State's control, nor under the control of the local development authority. The rise in overall incomes in the steel industry will only be gradual as productivity increase is slow (though the plant at Durgapur itself is due to be modernized shortly), and the market for steel is not buoyant. It appears that the State cannot do much immediately to bring about reduced mortality differentials by raising the social and economic status of households.

However, the health authorities could be encouraged to establish a system of readily available subsidized medical care in the *bustees*, given that access to the hospital provided for the steel workers is denied. An increasing trend in public-health strategy has been to establish decentralized public-health centres in rural areas of developing countries, staffed by paramedics. Progress in a similar provision for the shanty-town areas of industrial cities has been lagging behind in India; the result has been that slum-dwelling households have resorted to relatively expensive private medicine, sometimes compromising nutritional standards to do so (Pryer and Crook 1988). Although our evidence is not conclusive here, it does suggest that some of the advantages from employment in the large-scale industry, housing and incomes apart, are beneficial to children's health.

What is brought out more clearly by our analysis here is that the public authorities could intervene immediately and directly in the improvement of amenities, and to some effect. Our study seems to show that a ready supply of water to every household could make a substantial improvement in life chances; regarding toilets alone the statistical evidence is less clear, though the deprivation is clearly documented in our study and undoubtedly welfare, if not mortality, would be substantially increased if similar provision were made of accessible toilets.⁶ Controlled for occupational structure and maternal education in the household, our model suggests that providing ready access to water in the *bustees* could reduce child mortality by one-third; and the additional provision of toilets might reduce it still further. The authorities responsible for Durgapur, as in so many cities of the developing world, were eager to extend the coverage of the planned township to incorporate all the population, but the resources have not been forthcoming locally for such an investment. Such major infrastructural works, which include multi-storey concrete flats, wide tarmac roads, and extensive use of space for vegetation, public recreation, and shopping centres, are in any case very costly and our study gives no reason to believe their effect on child mortality would be any greater than the effect of selective improvements within the *bustees*; in fact in our study, location within the township itself contributed nothing *per se* to mortality reduction. Unfortunately, our study could not easily be designed to determine the independent effect of air pollution on child mortality; and any intervention would have to relate to the pricing of domestic fuels in this part of India, as well as introduce stricter controls over industrial emissions. These would require economic policy measures with political implications beyond the purview of the local authority.

To sum up, the path of selective interventions including better access to good drinking water in the unplanned areas appears to be far more cost-effective than trying to extend the coverage of the planned township in seeking to improve the prospects for child survival. Furthermore, the potential improvement in mortality following from such limited but practical interventions could be substantial. On the other hand, while both income and educational improvements would also contribute to reducing child mortality, they would not of themselves eliminate the effects of a deleterious physical environment. Not only must the latter also be tackled, therefore, but there is reason to argue that such interventions would be easier to target and more politically feasible for immediate action, especially in new industrial towns where land availability is still less of a problem than elsewhere. In that sense there

⁶ Improved access to, and hence increased use of water necessitates improved drainage as well, a fact overlooked in the earlier sanitary reforms in some of the metropolitan cities.

is some potential for such 'new' towns to have a more favourable impact on child mortality than other urban areas of the developing world.

References

- Al-Mazrou, Y. and S. Farid (eds.). 1991. *Saudi Arabia Child Health Survey*. Riyadh: Ministry of Health, Kingdom of Saudi Arabia.
- Bapat, M., N.R. Crook and C.R. Malaker. 1988. The impact of environment and economic class on health in urban India (case-studies of Pune and Durgapur). Project Report to IDRC. London: School of Oriental and African Studies.
- Basta, S.S. 1982. Health programmes directed to urban squatter populations. Pp.301–320 in *Urban Planning Practice in Developing Countries*, ed. J.L. Taylor and D.G. Williams. Oxford: Pergamon Press.
- Basu, A.M. and K. Basu. 1991. Women's economic roles and child survival. *Health Transition Review* 1:83–103.
- Behm, H. 1980. Socioeconomic determinants of mortality in Latin American countries. In *Proceedings of Meeting on Socio-economic Determinants and Consequences of Mortality (Mexico, 1979)*. New York and Geneva: World Health Organization.
- Bisharat, L. and M. Tewfik. 1985. Housing the urban poor in Amman. Can upgrading improve health? *Third World Planning Review* 7:5–22.
- Crook, N. R. 1992. *India's Industrial Cities: Essays in Economics and Demography*. Delhi: Oxford University Press.
- de Lima Guimaraes, J.J. and A. Fischmann. 1985. Inequalities in 1980 infant mortality among shanty town residents in the municipality of Porto Alegre, Rio Grande do Sul of Brazil. *PAHO Bulletin* 19:235–251.
- Farah, A-A. and S.H. Preston. 1982. Child mortality differentials in Sudan. *Population and Development Review* 8:365–383.
- Goldman, N. 1980. Far Eastern patterns of mortality. *Population Studies* 34:5–17.
- Government of India. 1988a. *Child Mortality Estimates of India, Census of India 1981: Occasional Papers No.5 of 1988*. New Delhi: Office of the Registrar General.
- Government of India. 1988b. *Bulletin*. Sample Registration System, New Delhi: Office of the Registrar General.
- Jagannathan, N.V. 1987. Planning in new cities: the Durgapur experience. *Economic and Political Weekly* 22:553–558.
- Jiang, Z. and M. Karkal. 1981. Mortality decline in China. Pp.177–188 in *Dynamics of Population and Family Welfare 1981*, ed. K. Srinivasan and S. Mukerji. Bombay: Himalaya.
- Malaker, C.R. and N. Crook. 1989. The use of widowhood data for investigation of mortality differentials in West Bengal: a district level analysis. *Demography India* 18:121–129.
- Pryer, J. N. and N. Crook. 1988. *Cities of Hunger: Urban Malnutrition in Developing Countries*. Oxford: Oxfam.
- Qichang, Z. no date. Problems of population structure in newly built heavy industrial cities. *Population Research (Beijing)* 1: 45–48.
- Ramasubban, R. and N. Crook. 1985. Mortality toll of cities: emerging patterns of disease in Bombay. *Economic and Political Weekly* 20:999–1005.
- Sivaramakrishnan, K.C. 1982. Durgapur: case study of an Indian new town. Pp.144–159 in *Urban Planning Practice in Developing Countries*, ed. J.L. Taylor and D.G. Williams. Oxford: Pergamon Press.
- Tekce, B. and F.C. Shorter. 1984. Determinants of child mortality: a study of squatter settlements in Jordan. *Population and Development Review* 10 (supplement):257–280.

From decline to recovery: the Marquesan population 1886–1945



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Abstract

Population decline in the South Pacific is poorly documented. Civil-registration data from the Marquesas (French Polynesia) from 1882 to 1945 are here used to calculate most of the usual demographic indices. Deterioration of natural equilibria following the arrival of Europeans in the islands and introduction of new diseases in a non-immune population caused a steady decline in the population. Beside catastrophic epidemics such as smallpox, mortality was high mainly because of introduced respiratory diseases. The very high mortality, ranging from 45 per 1000 to 70 per 1000 at the end of the nineteenth century and the beginning of the twentieth century, combined with low fertility due to the high proportion of sterile women (infected by venereal diseases), caused an annual decline of two to three per cent up to 1924. The arrival of a physician, introduction of basic sanitation and care of venereal diseases in Tahiti, whence most of the visitors to the Marquesas came, were followed by a sudden drop in mortality, rising fertility, and population increase. The depopulation phase lasted until the 1920s although the population generally stabilized elsewhere in Polynesia around the turn of the century.

Population decline in the Pacific has often been quoted but rarely demographically studied because the available data are poor, comprising unreliable estimates of the first navigators at the turn of the eighteenth century and incomplete censuses at the end of the nineteenth and beginning of the twentieth centuries.

The *Etablissements Français d'Océanie* instituted civil registration in 1852 in Tahiti and in 1882 in the Marquesas Islands. Depopulation had ended in Tahiti when civil registration became sufficiently complete to be used for statistics. In the Marquesas civil registration was fairly complete from 1886, except for infant deaths (see Appendix), and population decline lasted until 1924. Thus, it is possible to study population decline in the Marquesas for a period of forty years, during which the population steeply decreased from about 4900 to 2250 persons according to census data (see Rallu 1990).

Cultural and historical context

The Marquesan archipelago is situated 1500 km northeast of Tahiti and consists of six inhabited islands, Nuku Hiva, Ua Pou, Ua Uka (Northern group), Hiva Oa, Tahuata and Fatu Hiva (Southern group).

The Marquesas were discovered in 1595 by Mendana. Cook visited Hiva Oa and Tahuata in 1774 and several navigators and whalers visited the archipelago in the first half of the nineteenth century. In 1842, Du Petit Thouars, on his way to Tahiti, took possession of the Marquesas for the French. The French presence in the Marquesas was not significant: only one administrator and some soldiers were present on Nuku Hiva and Tahuata. Most often in the 1860s and 1870s no administrative nor military staff was present on the islands, and missionaries were the only French 'officials'. Hiva Oa was not pacified until the mid-1880s. Nevertheless, several censuses of the population were held from 1882

showing a rapid decline of the population. Similar declines were observed from the 1860s and the smallpox epidemic of 1863, and even from 1842 according to estimates of Du Petit Thouars and Jouan.

Dr Lesson, the first physician to visit the Marquesas, arrived in 1844. Although some of the administrators were also physicians (for example Dr Clavel and Dr Marestang) the health situation of the archipelago was very poor. Two physicians should have been located in the Marquesas, one in the Northern group and one in the Southern group, but most often only one was present in the administrative centre of Taio Hae (Nuku Hiva), and sometimes none. This was in strong contrast with the situation in Tahiti where a colonial hospital was built at the end of the nineteenth century and where there were several military and civil physicians, as well as subordinate medical staff. They were in charge of Tahiti, Moorea and the Leeward Islands which also benefited from better communications than the Marquesas.

The reports of the physicians in the nineteenth century are interesting but provide poor information from the point of view of modern medicine. The health situation of the Marquesas did not improve much until the 1920s. Then in 1923 a physician, Rollin, was posted to the Southern group. He mainly worked in Hiva Oa and Tahuata, more rarely in the distant Fatu Hiva; in 1933 he was located in Nuku Hiva and again no medical staff were present in the Southern group. Rollin (1929) wrote a book on the Marquesan culture using early sources but said nothing of his work as a medical practitioner and even less than his predecessors about the health condition of the population. Valenziani, an Italian demographer, visited the Marquesas in 1938 and made an interesting study for the time, reporting both his own and Rollin's comments on the health situation (Valenziani 1940).

On the whole, our knowledge of health in the Marquesas before 1945 is very poor. We are forced to rely on sometimes contradictory physicians' reports to understand why mortality was so high.

Data

Censuses

Censuses before 1945 provide only the total number of the population, sometimes separately for males and females and more rarely for children under 14 years. Published data on the age structure were not available before the 1946 Census. The nominative list of the 1892 Census enabled us to tabulate the age structure. The results are not very different from those obtained from the population file constituted from civil registration (Rallu 1990:55–59). The total population enumerated at censuses between 1892 and 1946 shows a declining trend.

Civil registration

In this paper, the historical demography of the Marquesas is studied using family and genealogical reconstitution from civil registration. The genealogies have been used to constitute a population file. Individual records include dates of birth, marriage and death, places of birth and death as well as filiation. As civil registration provides no information on external migration, all the persons born in the Marquesas are accounted for in the population until their death or 1945. Before 1930 or even 1935 emigration from the Marquesas was very rare (see Appendix); only the immigrants (non-Marquesan born) who arrived before 1886 are taken into account.

Births and infant deaths were corrected to take account of children who died before registration (see Appendix). The reconstitution of families shows that the registration of births and deaths of children who survived a few months, and of adult deaths, was almost complete. The correction of births and infant deaths which has been made is probably a maximum, which makes the low fertility rates shown below still more impressive.

The population reconstituted from the genealogies is always close to the population enumerated at the censuses and shows a very similar evolution. The former consistently represents about 95 per cent

of the latter when short-term migrants are not taken into account. The difference between enumerated and reconstituted populations is due to migrations (see above) and to short-term immigrants who do not appear in civil registration, the number of the latter increasing from 1920. As population trends shown by censuses are consistent with those of the reconstituted population which does not take migration into account, population decline appears to be mainly due to negative natural growth, a conclusion already made by Valenziani (1940) for the period 1914–1937.

Population trends

In the Marquesas, deaths exceeded births from 1886 to 1923 (Figure 1 and Table 1), by a factor of two. From 1886 to 1900 the crude death rate was high, over 40 per 1000¹, and the crude birth rate was very low, around 25 per 1000.² Mortality rose to over 50 per 1000 after the beginning of the twentieth century and became extremely high between 1911 and 1925, reaching almost 70 per 1000. A very dramatic epidemic hit the Southern group and in 1914, the death rate reached 156 per 1000 in Hiva Oa. Nevertheless, this epidemic was a very light charge on the population in comparison with continuous high mortality, and the epidemic deaths represented barely two per cent of deaths in the 1886–1923 period. Such levels of mortality were never recorded for periods as long as 15 years. During the mortality crisis (1910–1923), births slightly increased. In fact, mortality increased mainly in the Southern group of the Marquesas, while fertility rose in the Northern group, where mortality only slightly increased. In 1924, the number of deaths suddenly halved, probably as a result of the arrival of Dr Rollin in 1923. Between 1926 and 1930 about equal numbers of deaths and births were recorded, but mortality remained high at 44 per 1000. Mortality regularly decreased after 1931 and the birth rate continued to rise.

¹ After correction for unregistered deaths.

² After correction for unregistered births.

Figure 1
Vital rates

Table 1
Vital rates

Years	Mid-year population	CBR		CDR		Natural increase %
		Observed	Corrected	Observed	Corrected	
1886–1890	4,652	19.6	25.6	41.5	47.5	-2.2
1891–1895	4,188	17.6	23.4	37.2	42.9	-2.0
1896–1900	3,814	18.9	27.6	35.8	44.5	-1.7
1901–1905	3,440	21.5	27.4	45.3	51.2	-2.4
1906–1910	3,123	30.1	41.3	43.4	54.6	-1.3
1911–1915	2,797	28.8	38.8	59.3	69.4	-3.1
1916–1920	2,400	28.7	37.8	57.6	66.8	-2.9
1921–1925	2,111	32.0	43.7	52.0	63.7	-2.0
1926–1930	1,981	32.6	41.6	35.1	44.1	-0.3
1931–1935	2,032	42.7	49.3	27.4	34.0	+1.5
1936–1940	2,211	41.9	45.3	21.2	24.6	+2.1
1941–1945	2,483	44.6	48.1	16.6	20.1	+2.8

The levels of fertility and mortality resulted in annual negative growth rates of about two per cent until 1910, reaching three per cent in 1911–1920 (Table 1). Natural growth was still slightly negative in 1926–1930 but increased regularly thereafter.

The results for the period 1916–1935 are consistent with those obtained by Valenziani (1940) for the years 1914–1937 using annual total numbers of births and deaths (including immigrants) related to the total number of the population enumerated at censuses.

Mortality

Extremely high mortality is the most striking feature of Marquesan demography until 1924.

That age-specific mortality rates were very high is evident from the beginning of civil registration (Figures 2a, b and c).³ Adults, especially young adults, were hit by abnormally high death rates, and thus mortality only slightly increases, with age. Adult death rates were higher than the highest level of the Princeton model life tables and it is difficult to believe that such levels of mortality could prevail for decades. Moreover, death rates increased again from 1910. In the 1910–1923 period, age-specific death rates of adults were twice as high as the highest level of model life tables. It is difficult for a demographer to comment, having no other data for comparison, except during short epidemics or wars.

Female death rates were higher than those of males by 10 or 15 per cent, mainly at child-bearing ages, until 1935. Nevertheless, excess female mortality existed before ten years of age. In the 1936–1945 period excess female mortality became limited to the 10–29 years age group.⁴

Figure 2a

³ Age-specific death rates are considered from five years as underregistration of infant deaths and inaccurate date of births (due to the delay between birth and registration) prevent the analysis of death rates of younger children. Registered infant mortality rates fluctuated around 220 per 1000 for males and 170 per 1000 for females before 1924. Infant mortality decreased after 1924.

⁴ The Maori of New Zealand also experienced excess female mortality (see Pool 1991).

Figure 2b

Life expectancy at birth (Table 2) was just over 21 years in 1886-1905, and dropped to 16 or 17 years during the long mortality crisis of the 1910s and early 1920s. Life expectancy at ten years (which is not dependent on estimates of unregistered infant deaths) is lower than that of Level 1 of the West life table models, owing to the level of age-specific death rates at adult ages. Female life expectancy is systematically lower than that of males until 1935, often with a gap of two or three years. Such low levels of life expectancy over periods of 15 to 20 years reveal very poor health. Very few populations have experienced such high mortality. For example, life expectancy at birth was 24 years for males and 26 years for females in France around 1740-1749, owing to several food shortage crises, and was as low as 22-23 years in India at the beginning of the twentieth century during an epidemic of plague.

Table 2
Expectation of life at birth and age ten, by sex, various years

Years	At birth		At ten years	
	Males	Females	Males	Females
1886–1895	20.8	21.3	29.4	26.7
1896–1905	21.8	22.6	29.8	29.2
1906–1915	17.1	19.3	24.2	24.8
1916–1925	16.5	16.5	23.4	20.3
1926–1935	27.4	26.8	32.8	30.6
1936–1945	40.3	43.3	44.2	44.5

Figure 2c

Life expectancy began to increase rapidly after 1925 for both sexes, and the level reached in 1936–1945 was close to that of French Polynesia at that time. The level of mortality varied greatly between the islands. The mortality crisis of the years 1911 to 1925 was mainly located in the Southern group of the Marquesas before the effect of the first physician there in 1923. In Hiva Oa, some valleys like Hanaïapa experienced higher mortality. In 1916–1925, the observed crude death rate was 74 per 1000 in the Southern group as against 38 in the Northern group; it reached 83 in Hiva Oa and 102 in Hanaïapa in the absence of any epidemic. The annual population decrease was 5.1 per cent in the Southern group, 5.9 per cent in Hiva Oa and 8.3 per cent in Hanaïapa. Life expectancy at birth was well under 15 years in Hiva Oa in 1910–1925.

Causes of death were not registered but possible insights from other sources into the reasons for such high mortality are presented below.

High adult mortality for both sexes and excess female mortality show that violence and warfare were not a frequent cause of death since these would have caused excess male mortality. Only about one-half of excess female mortality was due to maternal deaths (death in the 60 days following a birth). The other half was due to other causes, such as that women take care of sick people and are more affected by infectious diseases. Death rates at 5–9 years were not very high and much lower than adult rates. Such high mortality was the result of imported diseases affecting adults in a population that lacked immunity against the new diseases.

Sanitation was very poor and medicine non-existent. In the absence of medicine, tuberculosis often had a fatal outcome after eight to twelve months. Alcohol also reduced resistance. Moreover, islanders were given bad alcohol made by the sailors, which was sometimes the cause of epidemics (Lesson 1981). Tuberculosis, other respiratory diseases and dysentery were the causes of death reported most often by physicians in the Marquesas, such as Marestang (1892) and Tautain (1898). They, as well as Rollin and Valenziani, also emphasized the importance of young adult deaths from respiratory diseases.⁵ Valenziani notes that a civil registration officer in Atiheu (Nuku Hiva) reported that half the adult deaths in 1918–1920 were attributable to ‘phthisis’. As the officer was not a physician this information is not very reliable, and ‘phthisis’ may include other respiratory diseases such as broncho-pneumonia, as acknowledged by Valenziani. Also according to Valenziani, probably following Dr Rollin’s statements, young children’s deaths were often due to intestinal diseases as a consequence of bad food (fermented ‘*popoi*’). Nevertheless, death rates at one to four years were not as grossly elevated as at young adult ages.

The steep and sudden drop in mortality is more difficult to explain. Rollin, the first physician in the Southern group, arrived in 1923. He could have used collapse therapy (pneumothorax) to reduce rapidly deaths due to consumption. BCG was used in the French colonies, but Rollin did not say in his book whether he used it. His role in the rapid decrease in the death rates is obvious: in 1924 the number of deaths in every valley of Hiva Oa and in the nearby island of Tahuata dropped by 50 per cent or more compared to 1921–1923; the drop occurred a few years later in the distant Fatu Hiva. The steep decline in deaths occurred at all ages except older ones. Changes in very basic sanitation could also have helped cause a rapid drop in mortality. A sudden underregistration of deaths in 1924 and the following years is unlikely and there is no evidence of it in the reconstituted families.

Nuptiality

Most marriages were consensual unions and thus around 80 per cent of fertile couples experienced extramarital births or premarital conceptions. Practically all adult women were married or were in a consensual union, the latter being known through the registration of extramarital births where the woman’s partner declared he was the child’s father. Thus fertility was not affected by high levels of celibacy although broken unions through widowhood or unstable unions affected the risk of conception.

Fertility

Low fertility was mainly the result of low fecundity. An ageing population structure due to population decline also had a slight deflating effect on the birth rate.

⁵ These were also frequent causes of deaths reported for the Maori of New Zealand (cf. Pool 1991).

The total fertility ratio (TFR)⁶ which was between 3.0 and 3.5 was very low in the 1886–1905 period. Then the TFR increased by steps: 4.9 in 1906–1910, 6.0 in 1921–1925 and 7.2 in 1941–1945. The shape of the curve of age-specific fertility rates in 1886–1895 was very flat. Rates were exceptionally low at young ages but almost normal at 35–39 years. In the following decades until 1920, age-specific fertility rates progressively rose before 30 years, but it is only from 1930 or 1935 that the fertility of the 20–29 age group reached the usual levels expected of a pre-transitional society.

Cohorts born before 1871 had very low fertility at ages 20–24, 25–29 and 30–34 (Figure 3); the 1876–1886 birth cohorts had slightly higher fertility at ages 20–24 or 25–29. The shape of the fertility curve by age is more usual for the birth cohorts of 1891–1906, but still low before 30 years, and women born from 1911 onwards have normal fertility. It is clear that the increases in the period TFR by steps is due to the arrival of these different groups of birth cohorts into reproductive ages.

Figure 3

⁶ Corrected for underregistration of births; corrected births were distributed by age of mother and by birth order according to registered births.

Table 3
Parity progression ratios (per cent) of birth cohorts

Birth cohorts	P ₀		P ₁	P ₂	P ₃	P ₄	P ₅	P ₆	P ₇	P ₈	Completed fertility (fertile women)
	observed	corrected									
1871–1875	40	54	79	82	72	88	93	86	89	83	4.74
1876–1880	53	72	80	87	95	95	92	76	82	84	6.08
1881–1885	57	77	76	89	86	85	93	79	96	50	5.18
1886–1890	60	80	85	87	87	77	77	92	98	92	6.14
1891–1895	68	89	87	84	96	84	86	77	99	74	6.24
1896–1900	67	85	94	82	87	69	85	83	91	88	5.84
1901–1905	64	78	88	79	82	80	84	99	97	92	6.07
1906–1910	69	81	85	90	91	91	(85)	(87)	(86)	0	
Crulai ¹			100	100	83	89	82	93	69	67	6.51
Tourouvre ²			100	97	100	92	91	84	80	82	7.70

Sources: ¹Henry 1958: Table 126; ²Charbonneau 1970:137, Table 2.

Figure 4

The analysis of fertility by birth order explains why earlier birth cohorts had so few babies. The size of the population under study is too small to analyse age-specific fertility rates by birth order, so we shall consider TFR by birth order and parity-progression ratios (Figure 4 and Table 3). First births are very few in cohorts born before 1880: between 28 and 46 per cent of the women in these birth cohorts had no child. Primary sterility was still around 20 per cent for women born in 1881–1890 and 13 per cent for women born in 1891–1900 and 1911–1920. Parity progression ratios p_1 , p_2 and p_3 are still low compared to other pre-transitional fertility levels. It is also unusual that parity-progression ratios increase with birth order up to p_3 or p_4 as seen in older birth cohorts. The p_5 and p_6 ratios are closer to pre-transitional fertility standards and p_7 and higher ratios are higher than in eighteenth-century France. The completed fertility of fertile women is 4.7 for the 1871–1875 cohort and exceeds 6.0 for the cohorts 1876–1905 (except for the 1876–1880 cohort).

Table 4
Completed fertility of various subpopulations according to birth cohort

Birth cohorts	All women	Fertile women	Currently married fertile women	(2)/(1)	(3)/(2)
1871–1875	3.19	4.74	5.93	0.67	0.80
1876–1880	4.09	6.08	8.55	0.67	0.71
1881–1885	4.22	5.18	7.40	0.81	0.70
1886–1890	4.85	6.14	9.80	0.79	0.63
1891–1895	5.72	6.24	8.10	0.92	0.77
1896–1900	5.54	5.84	7.73	0.95	0.76
1901–1905	5.26	6.07	7.92	0.87	0.77

The difference between the TFR and the completed fertility of fertile women represents the reduction of fertility due to primary sterility. Thus primary sterility reduces by one-third the completed fertility of women born in 1871–1880 (Table 4) and by 20 per cent that of women born in 1881–1890. The effect of primary sterility in later birth cohorts is much less.

Age-specific fertility rates of fertile currently 'married' (cohabiting) women, as shown in Figure 5 and Table 4, are quite close to pre-transition fertility standards for women born from 1876 and are very high even for younger generations (1906–1915). Completed fertility ranges between 7.4 and 8.6 in the birth cohorts of 1876–1905. The difference between this and the previous index represents the reduction of fertility due to unions that were broken by widowhood or separation.

It was difficult to assess if some infertile women were in a union or not. I considered them in a union if their last partner was still alive and did not appear in a subsequent union, but they could have experienced a broken union followed by no other union or an infertile consensual union. In the former case, fertility rates would be underestimated. On the other hand, some women whose last partner died or entered a new union could have experienced a subsequent infertile consensual union. Thus it is possible that I selected fertile women and this bias would probably be more important than the former one. As a result the difference between the fertility indices may include fertility reduction due to secondary infertility. The effect on fertility of broken unions and secondary infertility increases from the birth cohorts of 1871–1875 to those of 1886–1890; the latter were 20–24 years old in 1910 when the mortality crisis began and 35–39 years when it ended in 1924.

Comparison of three fertility indices (Table 4) shows that primary infertility was the main cause of low fertility in older birth cohorts (1871–1880). From the birth cohorts of 1881–1885; broken unions and secondary infertility were the most important cause of fertility reduction. Owing to secondary sterility and broken unions, the mean age at last birth was 32 years in generations born before 1900, compared to about 39 or 40 years in Europe before the beginning of the fertility transition. Thus the flat fertility curve before 30 or 35 years in older birth cohorts is due to abnormally high proportions of primarily and secondarily sterile women. Women who were not affected by diseases and broken unions had the usual pre-transitional fertility.

Figure 5

Contemporary observations are consistent with these results. For example, around 1880 Clavel surveyed 47 women over childbearing age and found that 20 of them (or 43 per cent) had not had a child, while the other 27 had borne 199 children (or 7.4 per woman). In 1890 Marestang surveyed 539 women aged 15 and older and found that 48 per cent were sterile.

Birth intervals were not corrected for underregistration of births, which probably causes the slightly longer intervals in older birth cohorts for whom underregistration was more important than for younger birth cohorts.⁷ Nevertheless, in most generations and especially those born from 1890 onwards, birth intervals are short compared to those in pre-industrial Europe (24 to 26 months in eighteenth-century France). This indicates that breastfeeding was very short, perhaps only three to six months. The comparison of the birth interval after a deceased child with that after a surviving child leads to the same conclusion.

Birth intervals between children of different fathers were about twice as long as between true siblings. This accounts for a reduction of about one birth per broken union when it is followed by a new union.

Venereal diseases were widespread in Polynesia at that time. Gonorrhoea would in general have been much more prevalent than syphilis. Gonorrhoea causes lesions that finally result in sterility, while syphilis causes abortions, stillbirths or premature births of infants who could not have been kept alive in the sanitary conditions of that time. Thus venereal diseases were the main cause of primary sterility and low fertility in older birth cohorts. Many women became secondarily sterile after only one or two births. Few women had more than eight or ten births. Overall health conditions also played a role in low fertility. It is well known that fevers due to any sickness reduce the fecundity of both males and females for the time of the sickness.

At the end of the nineteenth century, the colonial hospital in Tahiti began to treat venereal diseases and thus women born after 1886 were not so often affected. In addition, European sailors and traders coming to the Marquesas, who almost all came from or through Tahiti, were less frequently infected and did not spread the sickness so much. Young girls attended the missionary boarding schools, so they were not exposed to sexual intercourse and to venereal diseases until later than their elders had been, and a higher proportion of women bore one or two children before they became infected and sterile. Catholic missionaries wrote that Marquesan sexual behaviour (early intercourse with different partners) was the cause of low fertility.

Widowhood and separations or divorces also caused low fertility. However, these reduced fertility less than did primary and secondary sterility in older birth cohorts.

Population development and age structure

The 1886 population structure (Figure 6) shows an ageing population. There were fewer children aged 0–4 years than 5–9 years. Generally, numbers of young persons (5–19) are close to those of adults which are fairly stable from 20–24 to 35–39 years, probably owing to a long period of population decline. Children younger than 15 years make up only 27 per cent of the population while persons over 60 years comprise five per cent. The small birth cohorts between 1862 and 1866 (20–24 years in 1886), mainly evident for women⁸, are due to the catastrophic epidemic of smallpox in 1863 which the missionaries believed claimed one-third of the population in the northern group. Other epidemics occurred in 1844 (Lesson 19?), but little is known about them, especially before 1850 when few Europeans stayed in the islands and wrote reports.

⁷ If most unregistered births are due to stillbirths and linked with venereal diseases and subsequent sterility, birth intervals should not be too much affected by underregistration which would mainly affect the last births of women.

⁸ Age misreporting is very probable at the beginning of civil registration. Ages of father and mother were reported at the birth of each of their children; the most consistent age was included in the population file, which is often the age reported at births of first or second children, when the person was youngest. Nevertheless, the age of some women had to be corrected so that age at last birth should not be too high. A similar correction was impossible for males.

The stable population consistent with the 1886–1895 life table and an annual negative growth of two per cent has proportions of youthful population (28.5%) and adults aged 15 to 59 (63%) close to those observed in 1886. The sex ratio is 1.06 in the stable population against 1.04 observed in 1886, because of female excess mortality. The crude birth rate of the stable population, 13.9 per 1000, is close to the observed level in 1886–1890, taking into account a higher share of adults in the real population.

Thus, the population structure in 1886 implies a mean annual decrease of two per cent for the 50 to 55 years up to 1886. Backwards projection of the population using this rate, and taking into account the big epidemic in 1863, leads to a population of around 17,500 in 1848, which suggests that the estimate of Du Petit Thouars (20,200) appears to be too high. Famine, warfare, epidemics and new diseases had hit the population before 1848. Possibly 40,000 to 45,000 people lived in the Marquesas at the beginning of the nineteenth century but this is much lower than Forster's guess of 50,000 persons in two islands (Hiva Oa and Tahuata) at the end of the eighteenth century.

After 1886 extremely high mortality and low fertility had dramatic effects on the size and the age structure of the population. The Northern group was not affected by a mortality crisis in the 1910s and early 1920s and there fertility rose from 1900; the Southern group, mainly affected by poor sanitation and extremely high mortality, experienced fertility recovery only from 1930. The population of the Northern Marquesas was 40 per cent smaller in 1926 than in 1886 (Table 5). The population of the Southern Marquesas in the early 1930s was only a quarter of that in 1886. During the 20 years of recovery from 1926 to 1946, the population increased by 53 per cent in the Northern group but only by 17 per cent from 1930 to 1946 in the Southern group where mortality remained higher and fertility rose later.

Figure 6

Table 5
Population of the islands of the Marquesas

Year	Nuku Hiva	Ua Pou	Ua Uka	Hiva Oa	Tahuata	Fatu Hiva
1886	726	329	130	2504	348	742
1896	538	274	91	1963	291	612
1906	478	247	80	1510	216	470
1916	441	253	79	976	189	330
1926	428	228	73	543	147	247
1936	462	310	75	489	139	214
1946	540	468	106	546	160	285

Population decline caused an important ageing of the population due mainly to reduced fertility. In 1906 the proportion of children younger than 15 years was only 23 per cent in the Southern group while the proportion of persons aged 60 years and older was nine per cent. High mortality of adults caused a decline in the share of the 15–59 age group, making children under 15 years 34 per cent of the total population in 1926 in the Southern Marquesas, and 44 per cent in 1946 (48 per cent in the Northern Marquesas).

Conclusions

The Marquesas may be the worst, or one of the worst, cases of depopulation in the Pacific. Marquesan mortality and fertility levels and trends from 1886 to 1924 show the mechanisms of a rapid and continuous population decline with negative annual rates of natural increase of two to three per cent. This situation was due to very poor public health and to the breaking of natural centuries-old equilibria by the introduction of new diseases into a population lacking immunity and medical protection against them. Mortality and sterility were extremely high. Life expectancy at birth was well under 20 years from 1910 to 1923. Women born between 1871 and 1875 bore around three children on average and women born in 1876 to 1885 bore fewer than four children.

Following the arrival of a physician, the introduction of medicine with which to treat tuberculosis, and the development of basic sanitation, suddenly lowered death rates in 1924. Fertility increased progressively from the 1910s in the Northern Marquesas and from the 1930s in the Southern Marquesas, new generations being affected by venereal diseases at later ages and less frequently than their elders.

Appendix⁹

Quality of data

Incomplete registration affects infant deaths and births. Infant death rates calculated from registered deaths are obviously too low, ranging from 242 per 1000 to 114 per 1000 before 1930 and being most often under 200 per 1000. On the other hand, the fates of fewer than four per cent of persons are unknown. I conclude that both births and deaths of young babies were not recorded. If birth had been recorded but not death there would be many persons of unknown fate. Comparison of declared dates of birth at registration and baptism, and adjustment of infant deaths using the method of Bourgeois-Pichat, show that non-registration of birth and death of a child was due to a delay ranging from several days to

⁹ This summarizes Chapter 1 of Rallu (1990).

two or three months between birth and registration. If the child died before registration neither birth nor death was reported. Moreover, many stillbirths and premature births rapidly followed by death would have occurred because of syphilis, and might represent most of the underregistration of births and deaths.

Very few Marquesan people whose birth was not reported were recorded as marrying or dying in subsequent years (less than one per cent of all births) which indicates that the registration of births was almost complete so long as the child lived for a few weeks or months.

Tahitian census data and civil registration show that emigration from the Marquesas was very low until the 1930s. Very few Marquesan-born persons were enumerated in Tahiti and very few deaths or births occurred to persons born in the Marquesas and resident in Tahiti.

Correction of data

Most methods for correcting data for underregistration of infant deaths rely on the level of death rates at adult ages. Because of extremely high adult mortality before 1924, adjustment of infant death rates on adult ones leads to rates between 600 and 800 per 1000 which are obviously too high. Consequently I adjusted the infant death rate on that of level 1 of the West model life tables. After 1924 I adjusted infant death rates on levels 1 to 10 progressively by five-year periods, according to the course of adult mortality. The same number added to infant deaths was added to births. As adult mortality was exceptionally high from specific causes of death, the correction of infant deaths (using West level 1), and births, is a maximum, which also appears from the crude birth rate implied by the stable population.

The appendix table shows that the correction of births has no major influence on fertility trends. Fertility rises when the proportion of corrected births decreases. Uncorrected fertility is extremely low in early birth cohorts. As a result of syphilis most unregistered births would have been stillbirths, which raises the question of the measurement of fertility when many pregnancies do not result in live births. Should one consider pregnancies or live births when comparing the fertility of a population largely affected by syphilis to natural fertility? On the other hand, the probable predominance of gonorrhoea (on the assumption of a similar situation in the Marquesas as in Tahiti) and associated sterility is consistent with the low fertility observed after correction of births in former generations.

Registration of deaths, except for infants, is fairly complete. Estimates are also given of life expectancy at birth derived from death rates at ages ten and over which do not rely on correction of infant deaths.

Annexe table.
Corrected fertility and correction of births

Birth cohorts	Completed fertility	Correction	Period	TFR	Correction
1871–1875	3.19	1.36	1886–1890	3.25	1.30
1876–1880	4.09	1.36	1891–1895	3.01	1.33
1881–1885	4.22	1.35	1896–1900	3.43	1.46
1886–1890	4.85	1.34	1901–1905	3.22	1.28
1891–1895	5.72	1.31	1911–1915	4.87	1.37
1896–1900	5.54	1.27	1911–1915	4.89	1.35
1901–1905	5.26	1.22	1916–1920	5.08	1.32
			1921–1925	5.95	1.36
			1926–1930	5.56	1.28
			1931–1935	6.36	1.15
			1936–1940	6.22	1.08
			1941–1945	7.21	1.08

References

- Charbonneau, H. 1970. *Tourouvre au Perche*. Travaux et Documents No. 55. Paris:INED.
- Henry, L. 1958. *La Population de Crulai*. Travaux et Documents No. 33. Paris:INED.
- Lesson, P.-A. (1981) Note sur les maladies des indigènes des Iles Marquises en 1844. *Bulletin de la Société d'Etudes Océaniques* 216, Papeete.
- Marestang, M. 1892. La démographie aux Iles Marquises. *Revue Scientifique* 49:360.
- Pool, D.I. 1991. *Te Iwi Maori, A New Zealand Population Past, Present and Projected*. Auckland: Auckland University Press.
- Rallu, J.L. 1990. *Les Populations Océaniques aux XIX^e et XX^e siècles*. Travaux et Documents No. 128. Paris:INED.
- Rollin, L. 1929. *Les Iles Marquises*. Paris: Société d'Éditions Géographiques, Maritimes et Coloniales.
- Tautain, L. 1898. Etude sur la démographie de l'archipel des Marquises. *Anthropologie* 9.
- Valenziani, C. 1940. *Renaissance Démographique en Océanie Française*. Rome: Tipografia Conzorsio Nazionale.

Sexually-transmitted disease risk in a Micronesian atoll population*



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Abstract

The potential health threat of AIDS to the native island-based populations in the Pacific is now widely appreciated by those working in the public-health sector throughout the region. Although several countries in the region are yet to identify any cases of AIDS or HIV seropositivity, there is reason to suspect that heterosexual contact may emerge as a predominant mode of spread of HIV infection into native Pacific island populations. Sexual networks and their relationship to potentially 'risky behaviours' are described for a single native Micronesian atoll community on the basis of ethnographic observation and interviewing. This description is combined with the investigation of historic-demographic dimensions of the epidemiology of sexually-transmitted diseases in the same population to draw some conclusions about the opportunities for HIV transmission and acquisition among the sexually-active portions of this community. Although sexually-transmitted diseases have not had an appreciable epidemiological or demographic impact on the population in the past, the sexual networks within the community and beyond provide ample opportunity for the introduction and spread of sexually transmitted diseases, including HIV and its sequel AIDS.

In the Island Pacific regions of Micronesia and Polynesia sexually-transmitted diseases, especially gonorrhoea, syphilis, and HIV/AIDS, are emerging as important public health concerns. In particular, concerns over the future of HIV infection and AIDS have prompted considerable discussion about and implementation of educational and intervention plans in countries in the area. This is a region where health resources are often inadequate for the task of dealing with current health concerns; strained by inadequate funding, irregular drug supply, and a shortage of trained staff, especially in rural and isolated areas. In terms of the likely level of spread of infection, there is reason to suspect that heterosexual contact, following a 'pattern II transmission' model, may emerge as a predominant mode of spread from the earliest phases: that is, sexually active men and women will both be placed at (roughly) comparable and considerable risk of sexual exposure to HIV infection.

The aim of this paper is to make some predictive comments, from an anthropological perspective, on the behavioural dimensions of the risk of acquiring sexually-transmitted diseases; a single island population in the Micronesian nation of Kiribati is used as a case study, with particular attention to the possibilities for the sexual spread of HIV infection. This discussion draws on two perspectives: first, the historical-demographic and epidemiological evidence for patterns of sexually-transmitted disease

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infection in a single island population; second, an ethnographic investigation of sexual activity and sex-associated behaviours in this population as potentially risky behaviour for acquisition of sexually-transmitted diseases (STDs) at the community level.

Emphasis is placed on developing some notions of how sexual networks and behaviour patterns might provide opportunities for the transmission and acquisition of HIV infection. There are other opportunities for transmission of HIV, such as through serum contact in traditional obstetric and medical procedures, during tattooing and through vertical transmission; but here the focus is on the sexual act itself, from epidemiological, demographic and ethnographic perspectives.

Sexually-transmitted diseases and sexual behaviour in the Pacific: an overview

The Pacific Island region has a dramatic history in the apocalyptic impact of sexually-transmitted disease. The historical lessons in the region are clear: that such diseases can spread widely with disastrous social, demographic, and health consequences.

Throughout the Pacific region native populations declined dramatically, or virtually collapsed, in the late 1800s and early 1900s (see, for example, McArthur 1967; Carroll 1975; Pool 1977; Stannard 1989). Although STDs constituted only one mechanism for widespread decimation of native populations between the middle of the nineteenth and twentieth centuries, their impact is well documented for many of the island groups in the region.¹ Gonorrhoea, a disease introduced into the region with European contact, was a widespread cause of subfecundity and precursor to substantial declines in fertility, and had a devastating influence on the health and demographic history of many island groups (for example, Lessa and Myers 1962, Pirie 1972, Underwood 1973). It has been argued that the differential impact of gonorrhoea in different island groups in the Pacific shows some clear links to culturally-specific variations in sexual behaviour, most especially to social expectations and opportunities for female premarital and extramarital sexual activity (Pirie 1972:203). The pattern and extent of contact between foreigners and locals, as well as the level of local inter-island contact (see Underwood 1989:19) are also implicated in determining varying histories of STDs. The history of venereal syphilis is more difficult to trace, but it appears that yaws-linked immunity provided protection from the disease in the more humid central and western Pacific islands (Pirie 1972), even though there is no doubt that the arrival of European traders and sailors provided sufficient opportunities for the widespread and repeated introduction of the disease.

With increasing availability of antibiotics in the region after World War II, the impact of these diseases was markedly curtailed and the rise in fertility seen in various Pacific Island groups in the last several decades is testament to the increased levels of reproductive success which occurred with increasing control of sexually-transmitted diseases. However, and in line with trends identified in other developing and developed countries (De Schryver and Meheus 1990), in the last decade venereal syphilis and gonorrhoea have become more prevalent and have included penicillin-resistant strains of syphilis (Willcox 1980a; 1980b; Gyaneshwar et al. 1987). And, with yaws now virtually eradicated (Willcox 1980b), previous resistances to syphilis are no longer in place.

The latest indications of a burgeoning of sexually-transmitted diseases in the Pacific do not augur well for projecting and anticipating sexual transmission of HIV infection. On January 1, 1992, Pacific Island countries reporting no cases of AIDS were American Samoa, Cook Islands, Kiribati, Nauru, Niue, Palau, Solomon Islands, Tokelau, Tuvalu and Vanuatu (World Health Organization 1992). Certainly, the reports of cases of AIDS and HIV seropositivity in Pacific nations underestimate the real

¹ Other mechanisms associated with population decline in the region included voluntary and forced-labour migration, the introduction of acute contagious diseases and warfare.

level of HIV infection (World Health Organization 1991). Often, cases are identified only once the clinical signs of AIDS manifest or HIV infection is identified in donor blood.² The successful tracking of previous sexual partners of seropositive HIV and AIDS patients is compounded by several factors, including non-disclosure by patients, lack of staff to track contacts and, especially in more isolated countries, the fact that off-island, and often casual, contacts are a common initial source of HIV infection.

The primary reported mode of spread varies between those countries in the region where cases exist. For example, in Papua New Guinea over half of all cases are reported to have been contracted through heterosexual intercourse, while in French Polynesia it is suspected to account for approximately a quarter of the cases (World Health Organization 1991). The statistics on this point are, however, difficult to interpret. The proportional representation of non-locals, such as expatriate employees and tourists, is not made clear in reportage, and this has enormous implications for anticipating the main routes of transmission which may emerge in smaller, more isolated Pacific Island nations.

Educational programs have now been initiated throughout the Pacific, but they often do not specifically address the concerns and motivations of local populations. This problem is magnified by a lack of studies focusing on the culturally-specific context in which sexual activity and other forms of potentially risky behaviour take place; information which can be of questionable credibility when it is elicited in structured-interview formats.³ This is the format in which sexual ideology (the rules) tends to be reiterated at the expense of descriptions of sexual experience (the actual behaviour).⁴

Research addressing the context and nature of sexual behaviour in the Pacific has a long, if chequered, history in anthropology. Studies conducted in the region emphasize that the context and expression of sexual behaviour vary considerably between different groups. Patterns of sexual activity, including premarital and extramarital intercourse, availability of partners, number of partners, and anal-genital or oral-genital contact, also vary in line with status, age and gender within different groups.⁵ The case described here, of an atoll-based population in Kiribati, is but one example of the variety of sexual expression and behaviour in the Pacific region. It highlights, however, the fact that heterosexual marital intercourse is by far the most common form of sexual activity. Although ritualized-institutionalized homosexual activity is common in Melanesian populations (for example, Herdt 1984), the cases of common or socially legitimized homosexual activity in the Micronesia-Polynesia culture areas are rare.⁶

The study population: Butaritari atoll

Kiribati is an independent Micronesian island nation located equatorially on the interface with Polynesia in the central Pacific Ocean. The epidemiological profile of the country demonstrates a very high proportional mortality from infectious disease, higher than any other group in Micronesia and Polynesia (Taylor, Lewis and Levy 1989). Diseases with a significant health impact include tuberculosis, hepatitis B, infectious diarrhoea, gastro-enteric parasitic infestation, measles, influenza,

² Routine screening of donated blood and blood products is now practised, as is the aggressive (and successful) promotion of clean needle use in clinic settings.

³ The study by Hughes (1991) is a notable exception.

⁴ This distinction is explored with regard to anthropology by Leavitt (1991).

⁵ Examples include the descriptions of Howard and Howard (1964), Davenport (1966), Suggs (1966; 1971), Marshall (1971), and Carroll (1976).

⁶ One exception is the Tahitian institution of *mapu*, where **one** adult male in each village may practise fellatio as inserter with local boys (Levy 1971).

childhood malnutrition, and A and B group vitamin deficiencies. Life expectancy is low, approximately 50 years for males and 55 years for females (Booth 1990), and population growth rates are high; about 2.2 per cent in the last intercensal period (1985-90) (Rouatu 1991).

Data discussed here were collected as part of a broader project concerned with biocultural-demographic perspectives on fertility in Kiribati. Fieldwork took place over twelve months in 1990-91, and was centred in a large central village with a population of about 1250 on Butaritari Atoll, the second most northerly atoll in the Tungaru (Gilbert) chain. Butaritari has a subsistence fishing-horticultural economy and a predominantly Catholic population, numbering approximately 3,800.⁷ Fertility on the island is designated 'high', with a mean of 4.65 births calculated for ever-married women over age 15 (N=791) and completed fertility of 8.5 for living, ever-married, post-menopausal women (N=231).⁸ Biomedical contraceptive options, including male condoms, are available in the local clinics but acceptance rates are low (Brewis 1991). For both males and females marriage is nearly universal; in 1990, 96 per cent of all women over 25 years of age were currently or had previously been married. Average age at first marriage for women is 19.7 years, and for men is about three years higher.

The data were collected from archival materials, clinic records and vital registrations, and through demographic survey, structured and semi-structured interviews and participant observation. Interviews on reproductive behaviour were collected from 201 women, 34 of whom also participated in more detailed follow-up semi-structured interviews which covered more personal aspects of reproductive and sexual behaviour.⁹

Historical STD trends

It appears that such sexually-transmitted diseases as gonorrhoea and syphilis were not present on Butaritari before initial contact with Europeans in the 1830s. Lambert, a physician, surveyed for syphilis on the basis of penile chancres and found no sign of the disease in 1924 (Lambert 1924, 1928). Butaritari lies within the 'yaws zone' (Pirie 1972) with sufficient rainfall to provide a suitable environment for the maintenance of the disease, and yaws-linked immunity may explain the lack of appreciable historical impact of syphilis.

The history of gonorrhoea on Butaritari is not as clear, but some isolated cases have occurred on the atoll this century (Lambert 1928). Infertility levels in post-menopausal women provide an indirect indicator of the historical health impact of gonorrhoea, whereby significant prevalence of the disease increases the risk of pelvic inflammatory disease and ectopic pregnancy, and with this the risk of female reproductive failure. The female population of Butaritari displays an exceptionally low primary sterility rate. Of post-menopausal ever-married women alive on Butaritari at the end of 1990 (N=231), only 1.3 per cent had failed to produce at least one live birth.¹⁰ Historical reconstructions of Butaritari fertility, based on field census and interview data, also indicate that the current pattern of high fertility and concurrent natural increase in population size has been maintained since at least the beginning of the

⁷ Population counts are based on a fieldwork island census conducted in November 1990.

⁸ Fertility estimations are based on census surveys undertaken in November 1990 with all women over 15 years of age currently resident on the atoll.

⁹ See Brewis (1992) for a description of the participant-selection protocol and interview schedules. The 34 women in the repeat interview subsample were non-randomly selected to provide as broad as possible a cross-section of ages and reproductive/sexual histories. All interviews were conducted in the vernacular.

¹⁰ Primary sterility levels calculated in studies by other researchers for Pacific Island populations are typically at least three times this figure, and can range as high as almost 40 per cent of all ever-married post-menopausal women (Brewis 1992:Table 6).

twentieth century. Table 1 presents primary infertility (expressed as percentage of ever-married women nulliparous at menopause) and mean number of live births for Butaritari by birth cohorts for women still alive in 1990. A similar historical fertility pattern has been demonstrated by Lambert (1975:Table 6.12) for nearby Makin atoll on the basis of field-census data collected in 1971. These reconstructions indicate a very low or non-existent demographic impact of sexually-transmitted diseases on female fertility in the twentieth century, and show that in the previous generation fertility-inhibiting STDs can be presumed to have existed at a very low level.

Table 1
Fertility measures for all ever-married women alive on Butaritari in 1990 by women's birth cohort

Women's birth cohort	N	Percentage nulliparous	Mean number of births
1900–1909	11	0.0	5.09
1910–1919	15	0.0	8.53
1920–1929	50	2.0	8.26
1930–1939	99	0.0	7.35

It is difficult to explain precisely why the impact of STDs was historically lower on Butaritari than other islands in Micronesia, although several factors are clearly implicated. The relative isolation of the group and a shortage of exploitable resources limited contact with outsiders (Bedford, Macdonald and Munro 1980), and this would have limited the opportunities for repeat introduction of such diseases as gonorrhoea. Also, the system of landowner and chiefly-class polygyny that was common until early this century (Lambert 1963), along with social control of extramarital and premarital female sexual activity, may have limited the spread of such diseases through the community.

Recent STD trends

In the last several years diagnosis of gonorrhoea cases within the country has become more common. Most identified cases have been on more urbanized South Tarawa, most particularly on the densely populated urban islet of Betio. The implied incidence rate has increased dramatically during the 1980s, from 0.23 per thousand total estimated population in 1978 (Willcox 1980b) to 23 per thousand in 1990 (Tungaru Central Hospital Medical Statistics Unit). No cases were reported from Butaritari in 1989 and 1990, although two cases were reported in 1988 (one male, one female). There was no other record of the disease on Butaritari in the previous decade, for which clinic records were available.

At present, there is no reported history in Kiribati of other STDs which are prevalent in other developing and developed regions: such as genital chlamydial infection, genital herpes, genital warts, chancroid or granuloma inguinale (Moore 1992). In contrast, hepatitis B, which can be also transmitted through sexual contact, is a substantial health problem in Kiribati. No statistics on hepatitis B prevalence are available, but medical personnel estimate that 50 to 70 per cent of the country's population may be hepatitis B antigen positive. Medical staff report that the spread of the disease may be primarily through infected blood products, casual contact between children and through vertical transmission, rather than through sexual contact. A pattern of infection with HBV occurring predominantly in childhood in the family setting has been identified for several other Pacific Island countries (Gust, Lehman and Dimitrakakis 1979). This may indicate that hepatitis B exposure has already occurred by the ages at which sexual avenues for infection become possible. Thus, using HBV infection as an analogue for patterns of transmission of other STDs is likely to be misleading.

At the time the fieldwork on which this report is based concluded in July 1991 there were no clinically identified cases of HIV seropositivity or AIDS in Kiribati. However, several cases have been identified since as either HIV seropositivity in donated blood or clinically as AIDS.

An ethnographic perspective on sexual networks and risky behaviour for STD acquisition on Butaritari

The potential for the spread of HIV infection in a community is influenced by the level of 'sexual networking', the number and identities of partners with whom an individual comes into sexual contact (following Caldwell, Caldwell and Quiggin 1989). The form of sexual practices as they occur within sexual networks influences not only the number of partners placed at risk of STD acquisition but also the speed of the spread of disease (De Bruyn 1992). One way of studying sexual networks is to combine structured surveys with quasi-anthropological semi-structured interviews conducted by trained interviewers in order to establish partner identity and nature of sexual contacts for individuals within communities (see Orubuloye, Caldwell and Caldwell 1991). In the village setting of Butaritari, where the individual personalities are well known to one another and village 'gossip' runs rife, the idea of employing trained interviewers or formal approaches to investigate sexuality was not welcomed by female informants. Women did, however, feel comfortable offering such information about themselves and others in the village in informal settings once an intimate, casual rapport had developed with me.¹¹ For this reason, the forms of sexual activities and networks are described in qualitative (i.e., ethnographic) terms. The description is based on opportunistic, informal ethnographic questioning, as well as 'case histories' which were shared by women during the course of formal and informal interactions; these stories emerged and unfolded over time through repeated informal contact, having named participants with specified relationships to the informants. It should be noted that the discussion which follows clearly focuses on women's descriptions and interpretations of sexual activity within their community. This was more accessible to me as a woman, and contact with the men's community was not sought, particularly in researching aspects of sexual behaviour, as it was judged that this would have reduced the women's trust in and openness toward me in the area of sexuality.

An ethnographic description of the forms and nature of sexual contact on Butaritari

Sexual relations take several different forms on Butaritari, but the vast majority of sexual activity in the community takes place in marital relationships. This section outlines the different types of sexual relationships, and provides the background for drawing some conclusions about sexual networks and risky behaviour for the acquisition of STDs on Butaritari.¹²

¹¹ For example, many of the more productive discussions in this area involved the women and myself trading personal stories: the development of an atmosphere of **mutual** curiosity and sharing significantly enhanced the intimacy and honesty of many such discussions. That is, I had to be personally open and involved as well in discussing personal issues of sexuality and not expect the flow of information to move only in one direction. Although many of the interview topics were very personal and potentially private to the women involved there was little hesitancy by women to discuss topics in the area of sexuality. One reason that women generally felt unthreatened by these discussions is related to their own feelings that, as male partners control the timing and style of sexual contact, they were not discussing their own behaviour (and predilections) but those of their partners.

¹² It should be noted that the descriptions provided in this paper are taken from a more detailed ethnography of sexual behaviour on Butaritari (see Brewis 1992).

Married and unmarried women in Butaritari society

Full adult female status in Butaritari society is achieved through marriage and motherhood. Marriage is considered a desirable state; the alternatives for women are not considered very attractive. Married women are socially distinguished quite clearly from unmarried, sexually active women.

Nikiranroro women are those who operate socially and sexually outside the bounds of married or virgin states.¹³ The term has dual meanings in Kiribati. First, it can refer to women who remain never-married social virgins when their fellow age-cohort members have obtained husbands, usually by the late twenties or early thirties. In a second sense, *nikiranroro* are unmarried women who signal some form of sexual receptivity or activity, whether or not they actually engage in sexual acts. *Nikiranroro* have been defined in this way as 'landless quasi-prostitutes' (Lewis 1981), 'dishonoured girls' (Sabatier 1977:276), and as 'unmarried or divorced ... [and] fairly free, but not promiscuous, with their favours' (Pitchford 1972). Onorio (1979:49) calls *nikiranroro* 'single women who were not virgins and married women who were not living with their husbands.' This second category of *nikiranroro* can be most simply, and accurately, defined as 'unmarried non-virgins', whether currently sexually active or not. It is the *nikiranroro* defined in this sense which are the focus of the following discussion.

Nikiranroro often live with their natal family or with relatives and have a subservient role in household affairs, often expected, like other unmarried women, to carry the heaviest burden of daily housework. *Nikiranroro* on the outer islands have less independence than those in Tarawa, where more cash employment for single women is available.

Some I-Kiribati women interpret *nikiranroro* status as one actively chosen, which frees them from some of the social and sexual constraints on women they see in 'Kiribati custom'; this is most particularly true of *nikiranroro* themselves. Others, especially married women, perceive *nikiranroro* status as sad, pitiable, and very distasteful. In this sense, becoming a *nikiranroro* is the result of foolish action or unfortunate circumstances.

It is said there are several ways in which a woman may become a *nikiranroro*. First, a girl can be raised by parents who 'don't care' enough about how she 'runs around,' and thus she will have ample opportunity to become sexually active. Being so 'free' with her behaviour in a manner which can be observed by other people is sufficient to have her labelled as sexually active, or at least available, and generally the parents are blamed for this. Secondly, women who are 'proven' non-virgins fall into this category. A woman accused of being a non-virgin on her wedding night, and thus returned to her family, could easily slip into a *nikiranroro* role. The same is true of raped women who, although it may be appreciated that the whole blame for the incident does not rest with them, still have no legitimate excuse for their non-virginity. Divorced, separated and widowed women are also candidates for 'sexually active' *nikiranroro* status. The separated are the most at risk, especially if it is known in the village that the divorce was precipitated by some failing on the part of the woman rather than the man; such as a perceived unkindness towards her in-laws. Some women may actively choose the *nikiranroro* role as an alternative to being married to a 'bad man'; especially one who drinks or is violent toward them or their children. In some instances women have been enjoined to become *nikiranroro* by their family if they believe the husband to be a particularly 'bad man'.

¹³ The local derisive term *kameaka* refers to women (and also sometimes men) who are considered within the local moral framework to be indiscriminately promiscuous, that is, to behave 'like a dog'. *Kameaka* behaviour involves 'indiscriminate' casual sex with a number of men, usually while the woman is drunk, and may involve monetary transaction. *Kameaka* behaviour in women is exceptionally rare on Butaritari, with only one named case being mentioned in the course of interviews. It is reported that this practice is more common in the urban administrative centre of South Tarawa atoll.

Although widowed women are often left single in unambiguously faultless circumstances they can still be forced into a sexually receptive *nikiranroro* role unless they are careful to prevent the possibility of men coming to them at night to take sexual favours. Previous fertility performance has little direct effect on assumptions regarding sexual availability. I spoke with one woman in her thirties who had eight children; she felt very threatened by the possibility of forced sex resulting from the assumption of availability following widowhood. She slept with all her young children under her mosquito net as a precaution.

Nikiranroro women are often socially segregated from their categorically-chaste counterparts. Parents will attempt to prevent their virgin daughters from mixing with *nikiranroro*, and housewives can ignore or treat *nikiranroro* with disdain when they come into contact with them. This reinforces the ideal of the 'housewife' role, and demonstrates the low value placed on alternative roles for marriage-aged women.

It is possible for a *nikiranroro* to pass to the status of married woman by taking a husband and assuming the behaviour of wife; by settling down and staying in the home and assuming the humility of the 'housewife'. However, it is generally accepted that *nikiranroro* are less ideal choices as wives. A marriage to a *nikiranroro* may reflect negatively on the husband and his family. *Nikiranroro* who become wives are considered to be potentially selfish and badly behaved family members, accustomed to seeing to their own needs before others' and having little justifiable pride in their behaviour. They are also thought to be much more likely to seek extramarital lovers. This perception of the *nikiranroro* personality makes it more difficult for *nikiranroro* to legitimately procure a husband; they are said to be more likely to use love magic or special sexual skill to get a partner. When a man chooses a *nikiranroro* wife there is often widespread speculation about the influence of magic on his decision. In many ways this exonerates the man from his decision, since he is considered to be impelled by forces beyond his control.

Some sexually active unmarried women are not openly classified as *nikiranroro* in that they are socially considered chaste, or close enough to it. These are women who may be engaging in sexual activity with one specific man as a prelude to marriage. Such liaisons are maintained at a very discreet level, usually with the assistance of sympathetic kin, and are often only discovered when pregnancy ensues. In such cases, where a carefully watched young woman has become pregnant to a single beau, the family and the woman will expect marriage to ensue precipitately. When the young man evades his responsibilities the family can become extremely angry.

On Butaritari two to three per cent of women are socially and self-classified as *nikiranroro*. Currently and recently sexually active *nikiranroro* had typically conducted sexual affairs with three or four men at most in their lifetimes. *Nikiranroro* only very rarely have intercourse with foreigners, and most often are engaged in short-term affairs with local married men and typically have a long time, up to several years, between affairs. Contact between *nikiranroro* women in the village and Westerners is very limited, mainly because very few outsiders ever reside in the village and come into contact with local women (see Brewis 1992).

Marital sexual activity

There are several different styles of 'marriage' in Butaritari society.¹⁴ Although earlier this century polygynous marriage was practised within the chiefly classes, now marriage patterns are strictly

¹⁴ Approximately half of all marriages in Butaritari village are legal in the sense that they have been confirmed by the church or government. Pitchford (1977) argues that non-legal marriages in Kiribati are very unstable arrangements, but I found in many cases that these relationships had endured successfully. However, where *nikiranroro* took husbands, these were less stable relationships than those formed with 'virgins'.

monogamous. The most common style is socially-formalized marriages which are arranged either by the family, including marriage against the woman's consent, or by the couple with the help of their families. Other couples will elope, and this often ends up as a union blessed by both families. The loosest and most temporary marriage arrangement, that of 'lovers', is a union which may be formed by an already married man who is working on another island away from his wife.

According to the women, when a couple live together domestically and have a sexual relationship they are considered to be spouses (*bu*), and thus to fulfil all the local conditions of being considered married. In describing the sexual nature of the marital relationship any case where the partners refer to each other as *buu* (my spouse) is considered to be a 'marriage', as distinct from cases where unions are considered by the women to be transitory and not to involve any co-resident day-to-day domestic co-operation.

Sexual access is a primary part of the marital relationship, and the timing and style of sexual behaviour is set by male partners (see Brewis 1992 for a more detailed description). Women reiterated that allowing a husband constant sexual access is vital in marriage, and it is both foolish and selfish to ever refuse an amorous husband. To deny a husband intercourse is said to be against the woman's best interests because it may press him to seek out other women who are more sexually amenable, and it is also selfish because sexual access is a primary role of the housewife and one of her chief responsibilities is to her husband. On the other hand, women should never initiate sex with their partners.¹⁵ All overtures need to come from the husband; therefore, he controls sexual timing and frequency to the greatest degree. For a woman to be perceived as sexually assertive within a marriage delivers a very negative and threatening message to the husband, that is, that the woman may be behaving in a similar manner with other men. Married women, thus, take a reasonably passive role in the sexual activity which occurs in a marriage. They do, however, have some authority at specific times: during menstruation, in advanced pregnancy, after birth, and during notable sickness, to discourage their husbands from having intercourse with them. Their arguments are stated in selfless terms, for example, it would damage the foetus at advanced stages of pregnancy, the husband will become ill if they have intercourse during menstruation or the child will become sick while breastfeeding. It is almost inconceivable that a Butaritari wife would refuse her husband simply on the basis that she did not want to engage in intercourse. So, at certain life stages women have no control over sexual activity; at others they do have some measure of indirect control, but this needs to be very carefully expressed, negotiated and timed.

In fact, no women with whom I spoke expressed a desire to limit the sexual activity they had with their husbands. Beside the enjoyment that many women derived from sexual acts, women were uniformly clear that to refuse a man would jeopardize his sexual loyalty. Married women can go to some lengths to keep their husbands sexually pleased and attracted, ranging from constant availability to specific medical treatments to keep them 'feeling good' to their husbands and the rare and risky practice of vaginal cauterization designed to inhibit vaginal mucous production and female sexual secretion (see below). Women enjoy sex within their marriages, and say their husbands make efforts to ensure this. A satisfied wife is considered symptomatic of a loving marriage, and cunnilingus or female-dominant positions during intercourse are taken to symbolize a very loving male partner.

¹⁵ Some of the younger, better-educated women living in the village said they felt they could initiate sex with their husbands because they had more 'modern' marriages. All of these were 'love-matches' which had occurred within the last ten years. Thus, the notion of appropriate sexual behaviour between couples seems to be undergoing a transition in certain sections of the society. Some of these women even stated they would complain if they thought their husbands were not paying them sufficient sexual attention. As one said '... I am angry and I tell my husband if he comes home late and doesn't think of my needs'.

Women said they believe their husbands share their views on the need to keep a partner sexually satisfied. They say husbands are concerned about their wives' needs because if the women were unhappy they might think of being with another man who would do 'better things' for them.

Sexual satisfaction is essential to both partners in order for the integrity of the marriage to be maintained; this was a clear theme in interviews. This principle, coupled with the respect and fear accorded to emotional states of conjugal sexual jealousy, has an essential effect on cultural notions of appropriate levels of married sexual activity. Regular intercourse is expected and provided, by both sexes, through the reproductive years, which are also the years of expression of conjugal-sexual jealousy. Sexual activity seems to subside by the time the wife attains menopause and both partners are assuming the status of 'elderly' in the community and the household.

Couples reportedly employ a variety of sexual positions and techniques, including ventral-ventral with either partner superior, ventral-dorsal intercourse, and cunnilingus. Fellatio is very uncommon, and reportedly never practised by older couples. This is said to be because women find it unpleasant because the penis 'smells bad' and because they claim to be *kabi* (not holding specific technical knowledge) about the practice in Butaritari. There is an appreciation that, although it may be enjoyable for men, men do not want unwilling partners to practise fellatio. The appropriateness of female sexual passivity does not prevent men from being concerned about women enjoying sex; but apparently both men and women believe that in the act of fellatio the woman is taking too much initiative, and could therefore do the same with a man other than her husband. Cunnilingus is a different matter. Men want women, particularly their wives, to enjoy sex both because it is an intimate and pleasant thing in marriage and also because it will 'stop her thinking of other men.'¹⁶ To be able to do the act effectively is considered a reflection of the special 'skill' of the man. Unlike women, men are said to experience no 'shame', and to feel great pride in some cases, in bringing sexual expertise and experience to the marital mat. However, women believe men practise cunnilingus only for their own pleasure, rather than for the 'benefit' of the woman. Cunnilingus practised with *nikiranroro* is not common, mainly because it indicates that the man has 'fallen under the spell' of the woman and is no longer acting of his own free will.

Non-marital sexual behaviour

The vast majority of I-Kiribati women are married as virgins. Virginity is considered one of the most important qualities of a new bride, at least from the point of view of the groom's family. Many young women restated this to me in clear terms of their own ability to secure a suitable husband. It is important for a woman to move to a new household with a 'good reputation' as this will help maintain her status with the new family, and will ensure much better treatment by in-laws. If a woman is discovered to be a non-virgin on her wedding night there is a risk the marriage will be considered annulled, and the bride will be returned to her family in disgrace.

Although some couples may engage in premarital sexual activity, including oral-genital contact, this will often not include either manual or penile vaginal penetration. In most cases, premarital sexual behaviour cannot be considered an area of particularly risky behaviour for HIV transmission and acquisition. One problem in this area is the young women's lack of knowledge of sexual activity; such information is fairly widely circulated between married women but is not considered suitable for discussion with unmarried women.

¹⁶ Although Butaritari women generally seemed very satisfied with the sexual component of the marital relationship it is important to note that if intercourse is painful women very rarely complain. As during labour, women are expected to take pride in the brave suffering of such pain without complaint.

The situation is very different for men. Families will tolerate and even implicitly encourage young men seeking sexual experience with *nikiranroro* before they marry. However, *nikiranroro* characteristically prefer to 'play' with married, experienced men, rather than unmarried, younger ones: so single men may not in fact gain the experience they seek. Traditionally, men married for the first time several years later than they do today, and in this interim it was not expected that a man would save his virginity for the marriage mat. During fieldwork I had little opportunity to speak with men explicitly about their premarital experiences, but stories of men's attempts at sexual conquest abound in the women's community. Certainly, there is considerable peer pressure among young men to seek out the favours of women, and this has a strong element of demonstrating daring, skill, and charm to their friends. However, several younger men who had married in recent years were known to be virgins at marriage, and in these cases the families were more proud than embarrassed by this disclosure.¹⁷

Despite the value placed on premarital female virginity some women do have intercourse before marriage.¹⁸ This is seen as irresponsible and self-indulgent by the broader community. Of the women I spoke with in some depth who had premarital affairs, most felt they were 'tricked' into sex by their own innocence or had been coerced in their first encounter. Once virginity is lost, however, there is little point in maintaining celibacy, as the time for care has now passed.¹⁹

One category of women who seem to have nonmarital sex with relative social impunity is widowed women. Several widowed women interviewed, who were under 50 years of age, had quietly and discreetly taken lovers without the knowledge of their families, although their friends might have known. Each of the women stated they were only having sexual relations for their 'own needs,' and not as any prelude to a formalized union. Their partners are generally widowed also.

There is a distinct gender difference in the expectation and treatment of adulterous behaviour. Female adultery is not well tolerated, and this has been the case for some time. Wilkes (1845:91) noted in 1841:

After marriage a woman must be extremely guarded in her conduct, as the punishment for [adultery] is very severe, even amounting to death in some cases; but is usually limited to expulsion from her husband's house.

It appears that the recourse for female adultery was determined by both the status of the participants, and the manner in which the affair came to the attention of the husband. Stevenson (1905:318-319) wrote that on Butaritari only 'stealthy' adultery was punishable with death, and open elopement was compensated for with a land fine. Lambert (1963:227) differentiates between lovers caught in the act (when a husband would be justified in killing) and acts discovered later, when compensation with a land fine would suffice to appease the man and his natal-kin group, which could support him and act on his behalf. Gelett (1861) noted that the penalty for men having sexual relations

¹⁷ 'Virginity testing' of women at marriage is still common, despite opposition to the practice by the Church. It appears that the retention of premarital-female virginity was also important in the past. Although Wilkes (1845:91) tells us that on Butaritari, '... chastity [was] not considered a virtue, nor considered as any recommendation in the selection,' he was probably referring to the *nikiranroro* alone. Grimble (1921:33), in commenting on Wilkes's remarks, concluded that this actually indicated a high value placed on virginity for most women, and this conclusion seems warranted. Grimble (1921:41) wrote that earlier this century '... the violation of maidenhood was everywhere looked upon as one of the most awful offenses and was punished with great severity.'

¹⁸ A small proportion (3.9%) of the women in the reproductive-history collection had first-order birth dates which were less than eight and a half months from their date of marriage.

¹⁹ Sexual coercion of women is not rare in Butaritari, although it does not constitute a common sexual outlet (see Brewis 1992 for a more detailed treatment).

with the wife or betrothed of another man was that they could expect to be killed if they were of low rank, and to pay a high land fine if of high rank. Captain Davis (1896) observed a woman being flogged for adultery during a short visit in 1892.

Lambert (1963:80) makes the point that '...adultery was so widely defined by the Gilbertese that it must have occurred very frequently.' Various categories of adulterous acts, apart from intercourse with a married or betrothed woman, included seeing the genitalia of any married woman, even accidentally; passing a married woman on the road and not standing to the side; and speaking with married women in the village (Stevenson 1905; Kraemer 1906; Lambert 1963; Townsend n.d.).

Today, married women, under the watchful eyes of husbands and families, have almost no opportunity for marital infidelity. Further, the social sanctions against straying are so severe that there is strong disincentive for women to let even the slightest hint of impropriety develop. A woman suspected of infidelity could expect, at least, a severe beating, possibly to be shamefully divorced and, in extreme cases, to be killed by her angry husband. The 'traditional' practice of a husband biting off a (broadly defined) adulterous wife's nose in a fit of sexual jealousy still occurs occasionally (Brewis 1992, cf. Lewis 1990). Extramarital sexual opportunities are also limited for women. If a husband leaves the village or island his family is charged with watching his wife in his absence, and the activities of married women are generally carefully monitored.

For all these reasons, female adultery is said by Butaritari women to hardly ever occur. In all cases the man accused of committing adultery with a married woman is considered to be acting out of hate or revenge for her husband, not to be simply acting for sexual pleasure. It seems that, for men, adultery is a brave and dangerous act, and I suspect it rarely goes undiscovered when it happens: that is, details of a brave and daring act are very likely to be recounted. On the other hand, I got no impression from the women I spoke with that they thought the possibility of adultery was sexually exciting, or the act of adultery was revenge against their husbands. Although women were reluctant to divulge their activities in this area, I retain the impression that they did not generally seek or wish to accept any sexual partners other than their husbands, and for this reason they are probably having very little extramarital intercourse.²⁰

Male adultery is quite another matter, however. As expressed at the public level, there is no sanction against male infidelity with *nikiranroro*. Approximately half of all interviewed women married for more than five years reported at least one extramarital sexual event for their husbands. Men have a finite village-based pool of sexually available women, the *nikiranroro*, and no complementary pool of extramarital partners exists for women. The actual frequency of male adulterous sex seems specific to each arrangement. Some men would sleep with *nikiranroro* women only once or twice in the course of a marriage, others would consistently seek out other women, leaving the marital mat for a week or two at a time. Often these men would visit the house of the *nikiranroro* in the evening, and talk her into retreating into the dark or to the bush for the purpose of sexual intercourse, which on these occasions, according to *nikiranroro* women, would take place several times in the course of an evening.

Since the *nikiranroro* are finite in number, and far fewer than the number of married men in each village seeking extramarital sex, these affairs are often brief, with the *nikiranroro* moving onto a new

²⁰ Upon rereading Lambert's (1963) notes on female adultery in Makin and Butaritari after leaving the field I was surprised by the impression he gives that married women were frequently adulterous. This may be accountable in terms of the gender differences of researchers. Men speak frequently of their (purported) extramarital affairs and women do not. However, later Lambert (1981:162) commented that '... adultery may in fact be quite rare.' Given that female adultery is not socially tolerated and puts women at substantial risk of violent ill-treatment, social chastisement, ridicule, and divorce, I suspect that men's reports of widespread extramarital sexual 'conquest' with married women are exaggerated.

partner when someone more interested or interesting comes along. Men are most likely to seek the favours of *nikiranroro* when they drink, and the heaviest drinkers in the village tended to be those who most often seek, although do not necessarily obtain, the favours of *nikiranroro*. At most, married men probably manage to get the attentions of about five different *nikiranroro* in the course of their lives.

Homosexual episodes are very rare in this population. Male to male sexual expression is not tolerated, and social male homosexual roles are not socially accepted. There are very rare cases of male social trans-sexuality, referred to locally as *binabinaine*, but these reportedly rarely, if ever, include homosexual activity. It is reported that among heterosexual couples anal intercourse is not practised. Although such behaviour self-reports are difficult to verify, there is reason to believe that anal intercourse is not considered a preferred or sought-after practice in heterosexual coitus.

Men who leave Kiribati for temporary off-island employment, especially the 2,000 or so I-Kiribati who serve as seamen on foreign vessels, constitute an already identified (Moore 1992) group for repeated introduction of HIV infection to the Kiribati population. These seamen tend to be absent for several months at a time, returning home by air during leave and the conclusion of contracts. Both married and single men may serve on foreign ships, the main lure being the cash income which can be sent home as remittances to wives and family. It is very difficult to ascertain the level of risky sexual contact in which these men engage while they visit foreign ports, although there are several reports, by wives, of husbands' premarital experience with foreign prostitutes. One woman, the wife of a retired seaman, related that her husband's sexual ability and imagination stemmed from his contact with foreign prostitutes. Medical care for workers on these foreign vessels, mostly German lines, is said to be of a high standard (Moore 1992). Unfortunately, no information regarding off-island STD infection is recorded by the Kiribati hospital service.

Risky behaviour and sexual acts

The dynamics of sexual acts can affect the risk of acquisition of STDs. This section describes some ethnographically-identified behaviours which are potentially 'risky'. Focus is placed on instances in which women are engaging in marital coitus at times where the integrity of the vagina has been threatened and risk of HIV acquisition is potentially greater.

The practice of using vaginal inserts to promote dry and sweet-smelling genitalia, considered by women to be sexually pleasing to men, is a potentially risky behaviour. This is done most often by sexually-active unmarried women. There has been some evidence to indicate that the use of intravaginal irritants by women in Zaire, also designed to dry and tighten the vagina as a means of heightening male sexual pleasure, can cause vaginal inflammation, erode vaginal mucosa and place women at increased risk for contraction of HIV infection (Dallabetta et al. 1990; Brown and Brown 1992, both cited by De Bruyn 1992; see also Hrdy 1987:1110).

All married women on Butaritari manually evacuate the vagina of all mucus daily, and also habitually after intercourse. At times this may prove irritating to the vaginal entrance and walls, thereby increasing the risk of HIV acquisition.

Other practices by which women engage in sexual intercourse when the vagina is lacerated or otherwise susceptible include the risky, but rare, practice of vaginal and cervical cauterization called *te kotokoto*, designed to dry the genitalia and vagina to enhance male sexual pleasure during intercourse. This is mainly practised in the Southern islands of the Tungaru (Gilbert) chain and is becoming less popular because it is associated with both female infertility and death; however, it still takes place occasionally.

During the immediate postpartum period I-Kiribati have cultural prescriptions regarding an appropriate period of abstinence. The prescription stems in part from the local belief that maternal contact with seminal fluid will taint breastmilk and make a breastfeeding child ill. Some couples

negotiate this perceived health risk by engaging in coitus as soon as possible after a birth, even within three days; the rationale being that the child will be protected from the effects of the semen-affected milk if it is accustomed to it from the first breastfeeding episodes.²¹ Therefore, in attempting to negotiate the traditional notion of health risk associated with non-adherence to a postpartum period of abstinence, women may have sexual activity at times when genital damage is very likely to exist. I-Kiribati of both sexes strongly resist having intercourse during the peak days of menstruation.

Knowledge of and responses to sexually-transmitted disease

Although sexually-transmitted diseases are not common in this population, some local ethnomedical practitioners are aware of some symptomology of diseases which could be acquired through 'unclean' intercourse. In all, eight local experts were interviewed on the range of symptoms identified and treated for reproductive conditions. Only one of these healers had any extensive knowledge of different forms of sexually-transmitted diseases and described a possible cure for gonorrhoea; although she had never had occasion to use the treatment. The symptoms described as associated with 'unclean' intercourse include vaginal itching, strong and unpleasant genital odour and discoloured or heavy vaginal discharge. These symptoms are also associated with other conditions of female reproductive ill-health (see Brewis 1992).

Lay knowledge concerning sexually-transmitted diseases is very limited. Of the 34 women interviewed extensively on their knowledge and experience of women's reproductive ill-health, only three mentioned without prompting the possibility of sexually-transmitted forms of disease which could have symptoms in women, and no women reported ever experiencing any condition they interpreted as sexually transmitted. Most married women were, however, aware that such conditions might exist. Unmarried 'socially chaste' women, who are expected to have no knowledge of marital-sexual details, denied any knowledge or understanding of such diseases during interviews.

Dissemination of knowledge regarding HIV infection and AIDS was becoming apparent during the course of fieldwork, mainly through programs on the national radio station. During this time the Kiribati government launched the first national 'AIDS Week' campaign, which involved several comments during the news section about the disease, focused on a call for a 'return to Christian morality' in order to prevent the introduction and spread of infection. To my knowledge this engendered almost no local discussion, and upon being questioned women felt the issue of HIV/AIDS was of no threat or immediate interest to them. The clear perception is that it is a 'Western' disease which could only be contracted through sexual intercourse with Westerners while in a foreign country. When pushed to consider the local ramifications of the disease, married women repeatedly gave the opinion that it was likely to be a disease only of *nikiranroro* and married men, and of no consequence to sexually monogamous wives.

Transmission of STDs is unlikely to be prevented by use of male condoms unless substantial 'barriers' to their use are removed. Condom use is resisted for family-planning purposes within and outside marriage, and is even more resisted in 'casual' contacts where women are expected to assume a passive role in the negotiation of the sexual act. Women feel that any change in behaviour, including use of condoms or reduction in extramarital exposure, remains a male responsibility and it is inappropriate for women to express opinions, let alone control activity, in this area.

²¹ Ideal age for weaning is said to be about the time a child reaches the first birthday. Average age at weaning for all live births ever breastfed in the Butaritari sample is 14.57 months (s.d. = 10.8, N=684).

Conclusion

Although sexually-transmitted diseases have not previously had a marked demographic or epidemiological impact within this population it is probable on the available evidence that this situation will not last, given the changing patterns of marriage and off-island contact by locals.

It becomes clear in ethnographic investigation that the sexual networks exist to provide avenues for both the introduction to and spread of HIV infection in village communities. The dynamics of sexual activity outside marriage, centred on the finite number of *nikiranroro* in each village, makes them the focal point where sexually-transmitted disease could be passed between married men and subsequently their (faithful) wives. So, the mechanisms exist for the dispersal of sexually-transmitted disease through the village to over half of all couples; those couples in which the male partner has extramarital sexual liaisons. In terms of points through which STDs can enter the village sexual networks, married men temporarily working off-island and outside the country constitute the pool most likely to provide initial infection. The collection of qualitative data on the sexual experiences and perceptions of this group of men, presumably by a male researcher, is of particular importance to the more comprehensive prediction of HIV infection risk within the Kiribati population. In the study reported here this is one obviously vital area of investigation that was essentially closed because the investigator was a woman.

In conclusion, the Butaritari case cannot be an analogue for sexual networks and risky behaviour in other Pacific Island groups. The epidemiological-demographic history of the atoll demonstrates very low historical rates of STD infection, a pattern not observed in many other groups in the Micronesia-Polynesia culture area. As pointed out by Pirie (1972:203), this variation in epidemiological history is partly due to variations in the sexual-activity patterns between populations, as well as historical variation in marriage patterns (such as polygyny versus monogamy), extent and form of contact with foreigners and with nationals on other islands, and the form of socially appropriate and 'real' premarital and extramarital sexual activity of both sexes.

The description of sexual networks and behaviours in Pacific island communities, from both female and male perspectives, is a high-research priority in terms of anticipating the risky behaviours which could affect transmission and acquisition of HIV infection in the region. The seeming historical epidemiological-demographic and cultural distinctiveness of this case emphasizes the fact that lessons from one case cannot necessarily be applied to others in the area.

References

- Bedford, D., B. Macdonald and D. Munro. 1980. Population estimates for Kiribati and Tuvalu, 1985-1900: review and speculation. *Journal of the Polynesian Society* 89:199-246.
- Booth, H. 1990. Population census of Kiribati, 1985: demographic analysis. Kiribati Department of Statistics. Unpublished manuscript.
- Brewis, A. 1991. Fertility and family planning in Kiribati: a report to the Secretary of the Ministry of Health and Family Planning. Kiribati National Archives. Unpublished manuscript.
- Brewis, A. 1992. Age and infertility: an ethnodemographic investigation from Butaritari Atoll, Kiribati. PhD thesis, University of Arizona, Tucson.
- Brown R.C. and J.E. Brown. 1992. The risk of intra-vaginal irritants as a risk factor for the transmission of HIV infection in Zairian prostitutes. Paper presented at Seventh International Conference on AIDS.
- Caldwell, J., P. Caldwell and P. Quiggin. 1989. The social context of AIDS in Sub-Saharan Africa. *Population and Development Review* 15:185-234.
- Carroll, V., ed. 1975. *Pacific Atoll Populations*. Honolulu: University of Hawaii Press.
- Carroll, V. 1976. Rape on Nukuoro: a cultural analysis. *Michigan Discussions in Anthropology* 1:134-147.

- Dallabetta G., et al. 1990. Vaginal tightening agents as risk factors for acquisition of HIV. Paper presented at Fifth International Conference on AIDS in Africa.
- Davenport, W. 1966. Sexual patterns in a southwest Pacific society. Pp.175-200 in *An Analysis of Human Sexual Response*, ed. R. Brecher and E. Brecher. Boston: Little, Brown.
- Davis, E. 1896. Proceedings of HMS Royalist. Kiribati National Archives, Tarawa.
- De Bruyn, M. 1992. Women and AIDS in developing countries. *Social Science and Medicine* 34:249-262
- De Schryver, A. and A. Meheus. 1990. Epidemiology of sexually transmitted diseases: the global picture. *Bulletin of the World Health Organization* 68:639-654.
- Gelett, C. 1861. Letter to the Editor. *The Friend*, April. Honolulu.
- Grimble, A. 1921. From birth to death in the Gilbert Islands. *Journal of the Royal Anthropological Institute* 51:21-54.
- Gust, I., N. Lehmann and M. Dimitrakakis. 1979. A seroepidemiologic study of infection with HAV and HBV in five Pacific Islands. *American Journal of Epidemiology* 110:237-242.
- Gyaneshwar, R., H. Nsanze, K.P. Singh, S. Pillay and I. Seruvatu. 1987. The prevalence of sexually transmitted disease agents in pregnant women in Suva. *Australian and New Zealand Journal of Obstetrics and Gynaecology* 27:213-215.
- Herd, G., ed. 1984. *Ritualized Homosexuality in Melanesia*. Berkeley: University of California Press.
- Howard, A. and I. Howard. 1964. Pre-marital sex and social control among the Rotumans. *American Anthropologist* 66:267-283.
- Hrdy, D.B. 1987. Cultural practices contributing to the transmission of human immunodeficiency virus in Africa. *Reviews of Infectious Diseases* 9:1109-1119.
- Hughes, J. 1991. Impurity and danger: the need for new barriers and bridges in the prevention of sexually-transmitted disease in the Tari Basin, Papua New Guinea. *Health Transition Review* 1:131-141.
- Kraemer, A. 1906. *Hawaii, Ostmikronesien, Samoa*. Stuttgart: Strecker and Schroder.
- Lambert, B. 1963. Rank and ramage in the Northern Gilbert Islands. PhD thesis, University of California, Berkeley.
- Lambert, B. 1975. Makin and the outside world. Pp.212-285 in *Pacific Atoll Populations*, ed. V. Carroll. Honolulu: University of Hawaii Press.
- Lambert, B. 1981. Equivalence, authority, and complementarity in Butaritari-Makin sibling relationships. Pp. 149-200 in *Siblingship in Oceania*, ed. M. Marshall. Ann Arbor: University of Michigan Press.
- Lambert, S. 1924. Health survey of the Gilbert and Ellice Islands: with special reference to hookworm infestation. Suva: Western Pacific High Commission.
- Lambert, S. 1928. Medical conditions in the South Pacific. *Medical Journal of Australia* 22 Sep.:362-378.
- Leavitt, S.C. 1991. Sexual ideology and experience in a Papua New Guinea society. *Social Science and Medicine* 33:897-907.
- Lessa, W. and G. Myers. 1962. Population dynamics of an atoll community. *Population Studies* 15:244-257.
- Levy, R.I. 1971. The community function of Tahitian male transvestism. *Anthropology Quarterly* 44:12-21.
- Lewis, D.E. 1981. Change and hypertension in the population of Marakei Atoll, Kiribati. PhD thesis, University of Arizona.
- Lewis, D.E. 1990. Tungaru sexual jealousy and sexual mutilation. *Pacific Studies* 13:115-126.
- McArthur, N. 1967. *Island Populations of the Pacific*. Canberra: Australian National University Press.
- Marshall, D.S. 1971. Sexual behavior on Mangaia. Pp.103-163 in *Human Sexual Behavior: Variations in the Ethnographic Spectrum*, ed. D.S. Marshall and R.C. Suggs. New York: Basic Books.
- Moore, J.D. 1992. Report to the Kiribati Ministry of Health and Family Planning. Unpublished manuscript.

- Onorio, A. 1979. I-Matang: early European contacts. Pp.44-55 in *Kiribati: Aspects of History*. Tarawa: University of the South Pacific.
- Orubuloye, I.O., J.C. Caldwell and P. Caldwell. 1991. Sexual networking in the Ekiti District of Nigeria. *Studies in Family Planning* 22:61-73.
- Pirie, P. 1972. The effects of treponematosi and gonorrhoea on the populations of the Pacific Islands. *Human Biology in Oceania* 1:187-206.
- Pitchford, J. 1972. *Factors Affecting Fertility in the Outer Gilbert and Ellice Islands: A Pilot Study*. Tarawa: Family Planning Association.
- Pitchford, J. 1977. Family planning in the Gilbert and Ellice Islands. *South Pacific Bulletin* 22:13-16.
- Pool, D.I. 1977. *The Maori Population of New Zealand 1769-1971*. Auckland: Auckland University Press.
- Rouatu, I. 1991. Kiribati population census -- 1990 summary results. Kiribati Department of Statistics. Unpublished manuscript.
- Sabatier, E. 1977. *Astride the Equator: An Account of the Gilbert Islands*. Translated by U. Nixon. Melbourne: Oxford University Press.
- Stevenson, R.L. 1905. *In the South Seas*. New York: Charles Scribner.
- Stannard, D. 1989. *Before the Horror: Hawai'i on the Eve of Western Contact*. Honolulu: University of Hawaii Press.
- Suggs, R.C. 1966. *Marquesan Sexual Behavior*. New York: Harcourt, Brace and World.
- Suggs, R.C. 1971. Sex and personality in the Marquesas: a discussion of the Linton-Kardiner report. Pp.163-187 in *Human Sexual Behavior: Variations in the Ethnographic Spectrum*, ed. D.S. Marshall and R.C. Suggs. New York: Basic Books.
- Taylor, R., N. Davis Lewis and S. Levy. 1989. Societies in transition: mortality patterns in Pacific Island societies. *American Journal of Epidemiology* 130:634-646.
- Townsend, M. n.d. Land customs. Kiribati National Archives. Unpublished manuscript.
- Underwood, J.H. 1973. The demography of a myth: depopulation in Yap. *Human Biology in Oceania* 2:115-127.
- Underwood, J.H. 1989. Population history of Nauru: a cautionary tale. *Micronesica* 22:3-22.
- Wilkes, C. 1845. *Narrative of the U.S. Exploring Expedition during the Years 1838...1842*, vol. 5. Philadelphia: Lea and Blanchard.
- Willcox, R.R. 1980a. Venereal diseases in the islands of the North Pacific. *British Journal of Venereal Diseases* 56:173-177.
- Willcox, R.R. 1980b. Venereal diseases in the islands of the South Pacific. *British Journal of Venereal Diseases* 56:204-209.
- World Health Organization. 1991. AIDS and HIV infection in the WHO Western Pacific Region. *Weekly Epidemiological Record* 26:193.
- World Health Organization. 1992. AIDS -- global data. *Weekly Epidemiological Record* 69:10.

Forum: Adult mortality

The World Bank's recent publication, *The Health of Adults in the Developing World*, edited by Feachem, Kjellstrom, Murray, Over and Phillips, is both a response to concerns that adult mortality has been receiving insufficient attention and a challenge to governments, public-health workers and researchers. We present some different perspectives.



The health of adults in the developing world: the view from Bangladesh*

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Introduction

It is rare for a book to simultaneously point out a neglected research area, convincingly demonstrate the importance of the area through research and analysis, and set out an agenda for both action and research. *The Health of Adults in the Developing World*, by Richard Feachem and others in the World Bank group, does just this. One of their findings, which influenced much of their own research, is that very little good information exists on adult ill health and its consequences in the developing world. Rather than debating the significance of adult health I would like to add some data from Bangladesh, a poorer developing country than those considered by the World Bank group, to the discussion.

Data from Matlab, Bangladesh

Since the early 1960s the ICDDR,B, formerly known as the Cholera Research Laboratory, has been conducting research in a rural area known as Matlab, which is about 55 kilometres from Dhaka. In order to follow the effects of cholera vaccine trials, and later other health interventions, a vital registration system was established there in 1966. Since then field workers have regularly visited every household in the area, initially every other day and now fortnightly. At each visit all vital events: births, deaths, marriages and divorces, and migrations, which have occurred since the last visit, are identified. At each monthly visit the area supervisor, in consultation with the field worker, fills out the registration form for each event, which is then computerized and checked. The population now under surveillance numbers just over 200,000, and is the largest population under intense observation for this long in the developing world.

Several pieces of information which are routinely collected in Matlab make these data useful for examining adult mortality and its effects. Age is well recorded, although probably better for children,

*The Demographic Surveillance System of the ICDDR,B has been supported by a number of donors since 1966, and is currently funded by the government of the Netherlands and by the UNDP. The ICDDR,B is funded by countries and agencies which share its concerns about health and population in the developing world. I am grateful to Prof. Richard Feachem for calling my attention to this topic in 1988, and to the World Bank for the seed money to start this work. I wish to thank Karen Allen and Demissie Habte for comments on an earlier draft of this paper.

whose births are registered or who in-migrate at an early age making gross errors unlikely. Since surveillance began in 1966, and was based in part on earlier preliminary work, many young to middle-aged adults today will have entered the system at an early age, reducing the possibility of severe age misreporting. The Matlab field workers live in the area in which they work and most have been working there for 15 years or more. During this time they have developed a close rapport with the people in their areas which enables them to obtain better answers to questions like age than would be otherwise possible.

Whenever a death takes place in the surveillance area the supervisor tries to determine a cause of death. The methods used, as well as the classification schemes, have changed over time, as described by Zimicki et al. (1985) and Fauveau et al. (1991). Changes have generally reflected both the current research interests of the institution and the skill level of the field workers. Initially the registration forms had several boxes, one for each cause of death, which the interviewers simply ticked off. Gradually space was provided for additional comments by the field workers. These comments were taken into account by the cause-of-death coders. Since 1987 a verbal autopsy procedure has been in place. Field supervisors visit each household where a death has taken place, interview surviving family members, and write down in a somewhat structured narrative all of the events and symptoms which preceded the death. One medically trained coder then determines the cause of death and codes it using a modified WHO ICD-9 classification scheme. Analysing trends in individual causes of death (anything from tetanus to murder) over the period since 1966 is virtually impossible since the system has gone through so many changes. Following aggregate groups of causes, such as those proposed in the World Bank volume, does appear to be practicable, as seen below.

The final pieces of information which are entered whenever a vital event occurs and which make the surveillance system a very powerful tool for research, are the identification numbers of the individuals involved. This enables us to follow people longitudinally over time, as we do below to determine the subsequent survivorship of children in households where an adult death has taken place. The ability to link high-quality information on a large population over time makes the Matlab data unique.

Levels and trends in adult mortality

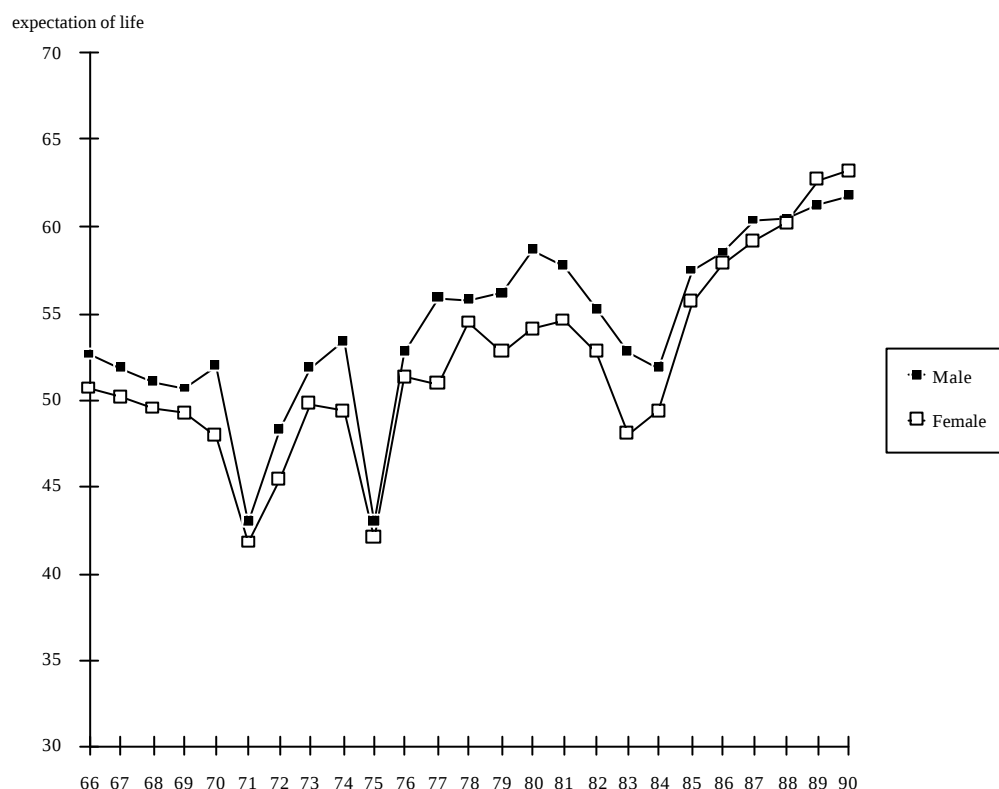
The expectation of life at birth for the population in the Matlab vital registration area has increased from 50-52 years in 1966 to about 62-63 years in 1990. This modest increase occurred despite several setbacks, as shown in Figure 1.

Dramatic but temporary declines in the expectation of life correspond to the dislocations caused by the War of Liberation in 1971 and the 1974-75 famine.¹ The more gradual decline in the early 1980s is probably due to the appearance of *Shigella* in Matlab.² Although the estimates for 1989 and 1990 are still provisional, it appears that female life expectancy at birth is now higher than that for males in Matlab.

¹ For a discussion of the demographic impact of the war see Curlin et al. (1976). The effects of the famine are examined in Dyson's articles (1991 a and b); by Chen and Chowdhury (1977); and by Razzaque (1989).

² The annual reports of the Demographic Surveillance System show a steady increase in death rates due to acute and chronic dysentery from 1981 to 1984. Unpublished data from the ICDDR,B's hospital and laboratory in Matlab show an increase in clinically diagnosed dysentery between 1982 and 1985, and a corresponding increase in the proportion of *Shigella* found in cultured samples. Many of these cases were resistant to existing antibiotics; the subsequent decline may reflect the introduction of newer drugs.

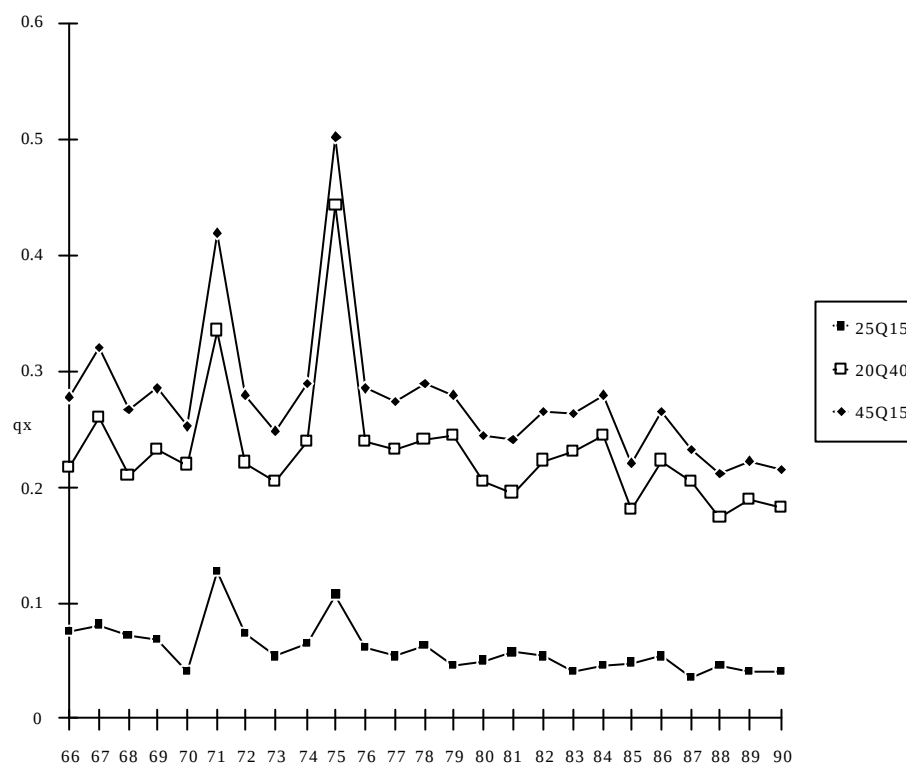
Figure 1
Expectation of life at birth, Matlab, 1966–90



Most of the 20 per cent increase in life expectancy is a recent phenomenon, and most of it is due to declines in infant and child mortality since about 1984. In part these mortality declines are a result of the Maternal and Child Health - Family Planning project which operates in half of the Matlab area. Since 1977 this project has recruited female health workers from each village, trained and supervised them, and has had them visit each household fortnightly. These workers now immunize women and children, treat mild to moderately severe respiratory and diarrhoeal diseases, and refer more severe cases to nearby clinics. The majority of these health interventions began after 1981. In the half of the surveillance area not covered by this project, infant and child mortality has also been falling, although not as rapidly. The decline there is probably due in part to government health programs and immunization, and to the availability of a wide range of inexpensive antibiotics from village pharmacies and health practitioners. Between 1978 and 1990 the death rate of children one to four years old fell by 76 per cent in the MCH-FP area and by 58 per cent in the comparison area.

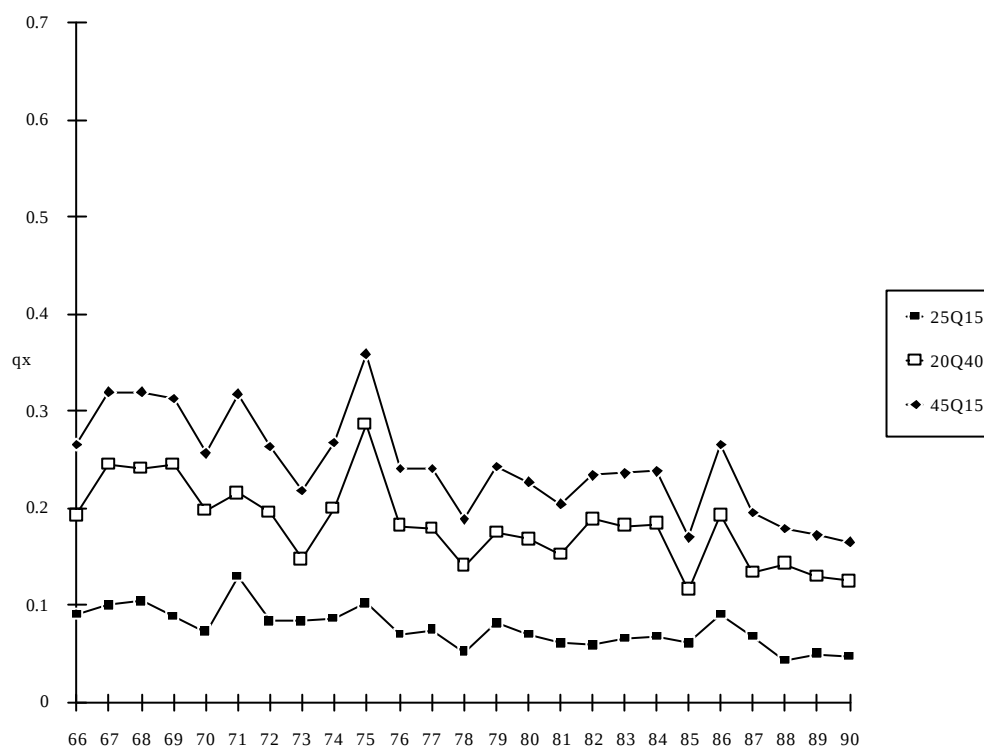
As shown in Figures 2 and 3, the declines in adult mortality in Matlab have been much more gradual.

Figure 2
Adult male mortality in Matlab, 1966–90



Adult male mortality declined from a $45q_{15}$ (the probability of a person age 15 surviving 45 years to age 60) of about 0.30 in 1966–67 to 0.22 in 1992, roughly the same as the decline in adult mortality in Chile during the same period and higher than, but parallel to, the decline in Singapore (Feachem et al. 1992:41). Declines in adult female mortality in Matlab have been somewhat more pronounced, with female $45q_{15}$ in 1966–67 of 0.30 falling to 0.17 in 1990. These probabilities are much higher than the $45q_{15}$ values for women in Chile, Singapore, Sri Lanka, Costa Rica, or China for the same period, but the Matlab decline parallels theirs. Despite the extremely high levels of maternal mortality suffered by women in Matlab, their adult mortality experience is generally better than that of men in the area. Young adult mortality, the probability of dying between age 15 and 40 ($25q_{15}$), has been slightly higher for women than men since 1966. Older adult mortality, the probability of dying between age 40 and 60 ($20q_{40}$), as well as overall adult mortality, has been lower for women every year since 1970.

Figure 3
Adult female mortality in Matlab, 1966–90



Causes of adult deaths in Matlab

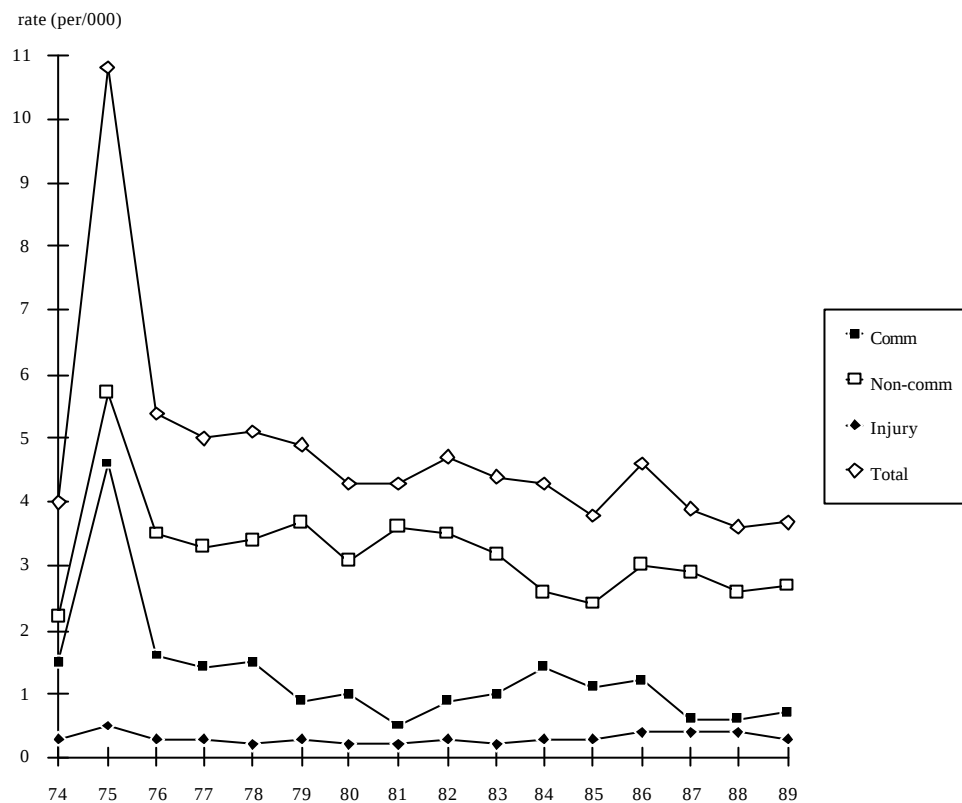
In order to compare the Matlab results with those presented in the World Bank volume, deaths each year were divided into the three groups which Feachem et al. (1992) used. These are communicable, including diarrhoea, tuberculosis, respiratory infections, and neonatal deaths, and reproductive; non-communicable, including neoplasms, diabetes, cardiovascular, chronic respiratory diseases, and senility; and injuries, including accidents, suicide, and homicide. Despite the potential problems with reporting systems and classification schemes mentioned above, the series for young and old adults are remarkably smooth, with spikes due to known events and with no major discontinuities when field or office systems changed.³

Figures 4 and 5, showing death rates for the three broad groups of mortality causes from 1974 to 1989, indicate that it is perhaps too soon to talk about a cause-of-death transition in Bangladesh.

Figure 4

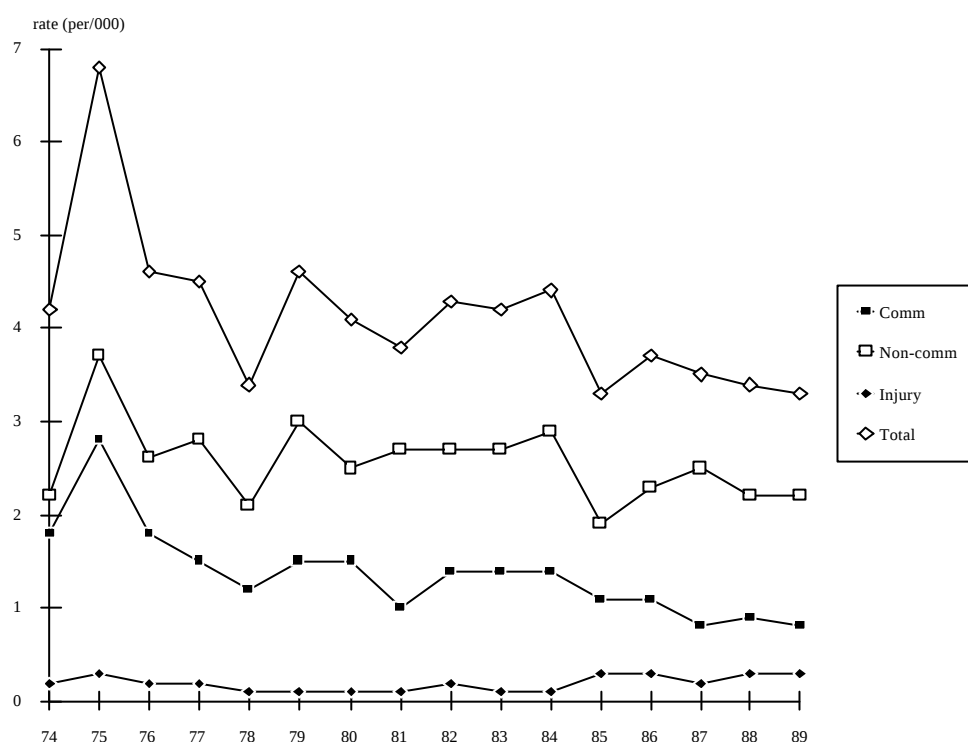
Adult male mortality by group of mortality causes, Matlab, 1974–89

³The anomalous one-year decline in the noncommunicable death rate for older adults in 1985 is under investigation.



As was found by the World Bank study (Feachem et al. 1992:60), for men aged 15 to 59 noncommunicable diseases account for most deaths, but there has been only a slight decrease in this cause in the past 15 years. Unlike the countries the World Bank group examined, communicable diseases are the second leading cause of death in Matlab, followed by injuries. There has been a slight downward trend in the former and an upward trend in the latter. The rates for communicable diseases and injuries have been roughly the same among men 15 to 39, primarily because deaths due to communicable diseases are fairly rare in this age group.

Figure 5
Adult female mortality by group of mortality causes, Matlab, 1974–89



For women aged 15 to 59 the death rates due to injuries and to communicable diseases, including maternal causes, are roughly the same as men's. It is women's lower rates of death from noncommunicable causes which have kept their overall rates below men's. Women aged 15 to 39 have about the same mortality rates due to injuries and noncommunicable causes as do men in that age group; their rates of death due to communicable diseases pushes their overall rate above men's. Women aged 40 to 59 have lower mortality rates for all three cause groups, especially noncommunicable and injuries, so that their survival in this age group has always been better than men's. Unlike the developing countries examined by the World Bank group, in Bangladesh the difference between the sexes is not due to lower injury rates or high communicable disease rates among women but rather to their lower rates of noncommunicable diseases.

Consequences of adult mortality

Chapter 4 of the World Bank book states that 'adult ill-health can harm the health of, and even kill, other household members' (Feachem et al. 1992:164). The authors then go on to review one study from nineteenth century Sweden and two from Matlab documenting the dramatic impact which the death of a mother has on the survival chances of a newborn child. They also present some preliminary results which I provided, which look at the mortality experience of children in Matlab following the death of an adult in their household. These data indicate that children, and especially girls, are much more likely to die if their mother died during the preceding two years. These results were based on only one year of adult deaths and two years of subsequent child experience (1983-85). This analysis has recently been

extended to 1983-89 (Strong 1992), confirming the previous results, although the effect shown is perhaps a little less dramatic.

In my study all households in Matlab experiencing an adult death in each calendar year between 1983 and 1987 were first located in the computerized data base. Then all children under ten years old in these households were identified, as well as their relationship to the deceased adult. These children were then traced for the 24 months following the adult death. Children in households without an adult death were also followed for 24 months, starting from 1 July of each calendar year. The survivorship of each child was then determined. The number of children in each category is shown in Table 1. These observations were then separated into different groups depending on the age of the child at the start of the interval, under the assumption that different types of mortality risks are present at different ages.

Table 1
Number of adult deaths and subsequent child deaths, Matlab, 1983-89

	Child dies		Child survives		Percentage dying	
	Son	Daughter	Son	Daughter	Son	Daughter
Father died	9	16	617	526	1.5	3.0
Mother died	32	37	407	337	7.9	11.0
Neither died	2,094	3,067	157,206	143,128	1.3	2.1
Ratio (%)						
with adult death	1.1	1.4				
no adult death	1.4	5.1				

Several control variables were included in the multivariate analysis of these data. Roughly half of the children were in the MCH-FP treatment area, where they receive good immunization coverage and some treatment and referral for diarrhoeal and respiratory diseases and malnutrition. A dummy variable was used to indicate whether or not a child was in this area. Dimension of the house, measured during the 1982 census of Matlab, has been successfully used as a measure of socioeconomic status in other studies and was therefore included here. Finally a dummy for the year in which observation began was included to examine trends in survivorship.

Expected probabilities of dying within 24 months of the start of observation for each age group of children are shown in Table 2. For children who are under one month old when they enter observation only the death of their mother significantly affects their survival chances, and that effect is dramatic: 70 per cent of them will die during the next 24 months. This probability is unaffected by socioeconomic status or residence in the MCH-FP area, and is virtually the same for boys and girls. (Note that this group is not the same as a birth cohort; these children have survived until the death of an adult or July 1 of the initial year.)

Table 2
Expected probabilities of dying within 24 months of start of observation, Matlab, 1983-89

Age of children	Father died	Mother died	Neither died
Less than 1 month			
son	—	0.697	0.061
daughter	—	0.737	0.073

1 month to 11 months			
son	—	0.263	0.034
daughter	—	0.368	0.055
12 months to 59 months			
son	—	0.044	0.015
daughter	—	0.078	0.027
60 months to 119 months			
son	0.008	0.016	0.003
daughter	0.011	0.020	0.004

Note: SES (dimension of dwelling), year, and MCH area held at mean values

For children one to eleven months old at the start of observation, the impact of a mother's death is half what it was for neonates, and the sex differential has increased dramatically, with girls about 40 per cent more likely to die than boys. Living in the MCH-FP area, or living in a better-off household, reduces the risk of death, but the death of a father still had no significant effect on survivorship. For children aged 12 to 59 months and 60 to 119 months the same pattern emerges, with death of father only becoming significant in the oldest age group. Probabilities of dying are lower in these age groups, but the sex differential reaches a maximum for children 15 to 59 months, where daughters, compared to sons, are almost twice as likely to die following their mother's death.

This study raised several important questions which are currently being investigated. The first of these is related to the causes of the adult and child deaths, and the interval between them: how many of the child deaths are medically related to the adult death, either through complications of delivery, or through the same infection or accident? A more fundamental question deals with care and feeding of children following the death of a mother: how does the household composition, including the possible remarriage of the father, affect child survival? And finally, why is the death of a father only important for children five to ten years old? Are economic safety nets at work which protect most younger children from this loss or is mortality too crude a measure of the long-term impact of a father's death?

Conclusions

These results from Matlab largely support those of the World Bank group. Although the age structure of the population in Bangladesh is quite young, so that about half of all deaths are deaths of children, 20 per cent are deaths to adults aged 15 to 59. As was found elsewhere, noncommunicable diseases are the leading causes of adult death, although deaths due to injuries are not as important as in the World Bank study. Age-specific death rates, and adult mortality overall, are falling, but in Matlab these trends are very modest and susceptible to occasional reversals. Men aged 15 to 59 years have higher mortality rates than women in Matlab, as they do elsewhere, but during the childbearing years male mortality has been a little lower than that of women. Ill-health of adults has significant consequences for children; the death of an adult increases the risk of death to children as old as ten years old for at least two years following the adult death. And finally, better information on adult ill-health and mortality is needed. Even in Matlab, where data are quite good for a country at this level of development, improvements, especially in the areas of morbidity and the determination of cause of death, are needed.

References

- Chen, L. and A.K.M.A. Chowdhury. 1977. The dynamics of contemporary famine. Pp. 409-426 in *Proceedings of the International Population Conference, Mexico*, Vol. 1. Liège: International Union for the Scientific Study of Population.

- Dyson, T. 1991a. On the demography of South Asian famines, Part I. *Population Studies* 45:5-25.
- Dyson, T. 1991b. On the demography of South Asian famines, Part II. *Population Studies* 45:279-297.
- Fauveau, V., B. Wojtyniak, H.R. Chowdhury and A.M. Sarder. 1991. *Assessment of Cause of Death in the Matlab Demographic Surveillance System*. Research Paper 91-1. London: Centre for Population Studies.
- Feachem, Richard, Tord Kjellstrom, Christopher J.L. Murray, Mead Over and Margaret A. Phillips (eds). 1992. *The Health of Adults in the Developing World*. Oxford: Oxford University Press.
- Demographic Surveillance System - Matlab: Registration of Demographic Events* (various years). 1966-1992. International Centre for Diarrhoeal Disease Research, Bangladesh (Cholera Research Laboratory).
- Razzaque, A. 1989. Sociodemographic differentials in mortality during the 1974-75 famine in a rural area of Bangladesh. *Journal of Biosocial Science* 21:13-22.
- Strong, M. 1992. The effect of adult mortality on infant and child mortality. Paper presented at the Annual Meeting of the Population Association of America, Denver, 30 April-2 May.
- Zimicki, S., L. Nahar, A.M. Sarder and S. D'Souza. 1985. *Cause of Death Reporting in Matlab: Source Book of Cause-specific Mortality Rates 1975-81*. Scientific Report No.63. Dhaka: ICDDR,B.

The Colleges of Medicine and the health of the South

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Physicians in the North, which by Brandt's definition includes Australia and New Zealand (Brandt 1980), often try 'to do something' for their fellow human beings in the South. Selzer (1986) the great surgeon-writer described this driving impulse well: 'Tomorrow we leave Peru carrying with us the pathetic belief that the way to heal the world is to take it in for repairs' (p.239). The medical missionary movement has long been a powerful force, with professionally trained personnel working in remote areas throughout the world. The iconic figure in that endeavour was, and still is, Albert Schweitzer of Lambarene. Medical associations of all types have lectured, consulted, and practised throughout the developing world. Tropical medical experts from the North not only invented the field but have served the several roles of research, teaching and practising their specialty, largely in the developed world. Clearly, the southerners hardest hit have been the infants and children under five, largely by infectious diseases and malnutrition, but those who survived the early years have had a reasonable life expectancy.

Over the past several decades infant and child mortality has declined dramatically, and in most areas, outside of war zones, continues to do so. I well remember the back room at the Villa Serbelloni in Bellagio, Italy, in 1988 when Jack Caldwell first enunciated the concept of the Health Transition. It was, in the parlance of James Joyce, an epiphany; a sea-change had quietly crept up on us.

We are faced with an enormous and exponentially growing problem of health care and preventive medicine among the elderly for which the South is poorly prepared. Without, in any way, neglecting the problems of infants and children which remain enormous, how best can the medical expertise of the North be applied to this 'new' problem of the South? It must be said from the outset that the skills and experience of those individuals and organizations that wish to become involved must be appropriate to the needs addressed.

Let me describe two different approaches that have recently involved two of the great associations of specialists in internal medicine, the Royal College of Physicians and its American counterpart.

Action in International Medicine (AIM) was initiated in 1988 by Sir Gordon Wolstenholm, O.B.E., M.D., L.L.D., F.R.C.P., F.A.C.P., the illustrious past director of The Ciba Foundation. He began by obtaining the backing of the two Colleges, but AIM is now an international consortium of medical and health professionals engaged 'in programmes to strengthen health management systems in developing countries' with the specific goal 'to improve the structure and function of "District Health Systems"' (Action in International Medicine brochure 1992:1). While many of its member organizations specialize in adult medicine, the focal point of AIM's program is the development of district health systems, providing for populations of several hundred thousand people through primary and secondary care. The 'bare statistics' quoted to support this approach relate to women dying in childbirth, and infectious diseases of infants and children. A purpose is to train generalists who can deal with a broad spectrum of problems such as 'chronic osteomyelitis, cataracts, obstructed labor, contractures from burns, poliomyelitis and leprosy,' and who 'enjoy the challenge of public health' (*Action in International Medicine Bulletin* 1992:1).

The International Medical Activities Subcommittee of the American College of Physicians deals with a variety of programs, largely in the developing world. These include fellowships for Latin American physicians, opportunities to work at missionary hospitals in the rural South, and support for AIM. Recently the committee began to explore new initiatives. Dean Gerald H. Escovitz of the Medical College of Pennsylvania took a year off to prepare a report subsequently published in the *Annals of Internal Medicine* (1992). Escovitz described transition countries as having an infant mortality rate of 20 to 80 per thousand live births, a life expectancy of 60 to 70 years, a medium birth rate, good sanitation, and a growing literacy rate. This includes most countries in Central and South America, many of those on the Pacific Rim and some Eastern European and Middle East countries. He notes that

The health care needs of adults in developing countries experiencing the health transition provide, for internal medicine in developed countries, a timely and appropriate focus of interest and potential support (Escovitz 1992: 501).

He suggests that the Alma Ata Declaration needs to be specially applied 'to the adult chronic diseases' including

not only selective primary care with a reemphasis on preventive medicine but selective secondary and tertiary care as well, with selectivity based on both efficacy and affordability (Escovitz 1992: 504).

One of the 'buzzwords' of the recent past was appropriate technology for the developing world. It seems that in this time of transition the appropriate use of the medical manpower of the North to aid the people in the South is a matter of great importance. Given the training and experience of the great majority of the members and fellows of the Colleges of Medicine, it seems inappropriate for them to be engaged in management of district medical systems, public health matters, and surgical, obstetrical and paediatric problems. On the other hand, the coming of the health transition appears to afford the altruistic members of the Colleges of Medicine of the North a unique opportunity to collaborate with their counterparts in the South. Working effectively under the financial constraints of that region could be a salutary experience, and one that can well be exported home.

References

- Action in International Medicine Bulletin*. 1992. 1(1).
 Brandt, W. 1980. *North-South, A Program for Survival* Cambridge, MA: MIT Press.

Executive summary. 1992. *Action in International Medicine* brochure.

Escovitz, Gerald H. 1992. The health transition in developing countries: a role for internists in the developed world. *Annals of Internal Medicine* 116:499–504.

Selzer, R. 1986. *Taking the World in for Repairs*. New York: Morrow.

The effects of socioeconomic factors on adult morbidity in Thailand

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Introduction

Nowadays, many developing countries are facing problems of adult health as these countries experience rapid social and economic development and transitions in their demographic profiles (Mosley, Jamison and Henderson 1990; Murray and Feachem 1990; Pan American Health Organization 1990; Jamison and Mosley 1991; Phillips 1991). However, little is known about the cause of adult health problems because data on adult health are relatively difficult to obtain (Timaues 1991). *The Health of Adults in the Developing World*, a book supported by the World Bank, therefore, calls attention to the importance of considering adult health experience in developing countries (Feachem et al. 1992). This book analyses existing data and presents overall levels and specific causes of adult mortality, measures of morbidity, consequences of adult health, important factors affecting adult health and guidance for future research and health policy. To contribute to knowledge of adult health in developing countries, my article is derived from dissertation research (Sethapongkul 1992), undertaken to address questions similar to those posed by the authors of that book; but my research deals with a single country and thus involves more detail. The emphasis in this research is on adults of working age (15–60 years) in Thailand, with the particular goal of improved understanding of the impact of socioeconomic factors and health interventions on morbidity. The theory of epidemiologic transition proposed by Omran (1971) is applied to explain adult health experiences in Thailand. The main concept of this theory is that disease patterns are associated with demographic, social and economic changes and that as a country moves from a developing to an industrial society, health problems will also shift from communicable and infectious diseases to man-made and degenerative diseases.

Source of data

The source of the data for this research is the 'Morbidity Survey'. This project was conducted during April and May of 1985 by the Institute for Population and Social Research, Mahidol University, Thailand. The sample totals 22,151 persons, comprising 5,663 in urban areas and 16,488 in rural areas. The main statistical method is logistic regression analysis.

Causes of illness

In this study, illness refers to any condition that interrupts a person's daily routine or prevents food intake for at least 24 hours, or that is diagnosed as a physical or mental disorder by a medical doctor. Ordinary headaches or chronic colds are explicitly excluded. Causes of illness differ somewhat from

causes of death. Accidents, poisonings, and violence are main causes of death among young adults while heart diseases, malignant neoplasms, tuberculosis, and accidents, poisonings and violence are leading causes of death among middle-aged adults (Porapakham 1986; Sethapongkul 1992). On the other hand, causes of illness indicate that the overall level of acute sickness observed is half of the level reported for chronic sickness. Diarrhoea and acute respiratory infections are common acute illnesses among adults. Peptic ulcer has become the first leading cause of chronic diseases for both young and middle-aged adults: it appears that the prevalence rate of peptic ulcer in Thailand is much higher than the rate in Western countries such as the United States. Among young adults, other major health problems are chronic infectious and parasitic diseases (i.e., malaria) for men, while diseases of the circulatory system, urinary tract and sex organs are common disorders for women. In addition to peptic ulcer, middle-aged adults suffer from many other chronic conditions such as cardiovascular diseases, chronic respiratory diseases, diabetes, and tuberculosis. Injury is a cause of morbidity, as well as mortality, among young adult men. Around half the injuries to young adults are caused by motor-vehicle accidents.

The effects of socioeconomic factors on unhealthy behaviours and sanitation

Most physicians and medical epidemiologists agree that unhealthy behaviours are major causes of many modern diseases (for example, Wynder 1981). Unhealthy behaviours in this study include smoking habits, drinking behaviour, and misuse of anti-pain medication. Around 31 per cent of adults of working age report being smokers. Cigarette smoking is most common among men, who are 32 times more likely to smoke than women. Higher socioeconomic status (education, family wealth and occupation) decreases significantly the likelihood of cigarette smoking; but among smokers, the number of cigarettes smoked per day does not vary substantially by socioeconomic status. Blue-collar workers have the highest probability of cigarette smoking and are the heaviest smokers. Professional and white-collar workers have a low proportion of smoking but those who do smoke are heavy smokers. Urbanization has a negative effect on the proportion smoking but has a positive effect on the number of cigarettes among smokers.

Drinking behaviour is measured by the frequency of drinking alcohol: every day/almost every day, 1-2 times per week, occasionally, and never. Most Thai adults do not drink alcoholic beverages, and of those who do, most drink occasionally. Alcoholic beverages are much more popular among males than females: drinking among females is less socially acceptable in Thailand. The probability of being a non-drinker tends to be positively associated with family wealth and occupation. Blue-collar workers are most likely to drink alcohol frequently, and professional and white-collar workers drink more often than farmers. The variation between drinking and socioeconomic status may be related to the involvement in social circumstance and functions. Drinking is largely a social and recreational activity, common in social settings such as parties, clubs, bars, meetings, and restaurants (Clark 1991). Since it is likely that individuals with higher socioeconomic status participate more often in these social settings (Hilton 1991), their drinking may be related to social norms and values or to their work duties, that is, entertaining clients. On the other hand, blue-collar workers may drink alcohol as a way of coping with social deprivation (Dutton 1986).

Another unhealthy behaviour is the use of anti-pain medication. Labourers and farmers often use this medication to relieve back and other pain from their heavy work, and they tend to use it more often. The misuse and side effect of such medications may lead to peptic ulcer (Soll 1989); thus this issue is especially relevant to this study, because peptic ulcer is one of the most common diseases among the sample. Blue-collar workers are more likely to take anti-pain medication than other occupational groups. As the survey period was during the off-season of agriculture, farmers were less likely to use

this medication than blue-collar workers, but tended to use it more than professional and white-collar workers and those who were not working.

Sanitation is a salient intervention relating to infectious diseases in rural areas: having a latrine is an important indicator of hygiene. Compared to urban areas, households in rural areas are far less likely to have a latrine; this reflects the inequality of development and distribution of facilities within the country. The household head with a lower level of education or family wealth, or who is a farmer, is less likely to have a latrine. The finding suggests that lower socioeconomic status of the household head makes it difficult for the family to have a latrine.

The impact of socioeconomic factors and health interventions on morbidity

The theory of the epidemiologic transition suggests that people in more developed locations and in higher socioeconomic status are more likely to be sick with chronic diseases and less likely to become sick with acute diseases. However, the results of this study are only partly consistent with this theory: they indicate that a disparity in development between urban and rural areas reflects inequalities in health and differences in types of sickness conditions or diseases. People living in urban areas are generally healthier than those in rural areas. In urban areas, those with better living conditions, food, and medical care are less likely to be sick from the acute and chronic diseases that are usually associated with poverty: infectious diseases, cataract, and nutritional deficiencies. However, the processes of urbanization and industrialization also increase environmental pollution, stress, and adverse behaviours: smoking, drinking, eating richer food, less physical exercise. Consistent with this observation, the analysis shows a greater prevalence of chronic degenerative diseases such as peptic ulcer, cardiovascular diseases and chronic respiratory diseases in urban areas. Peptic ulcer is also a common disease among rural villagers, indicating that it is not always related to the processes of modernization.

The role of development in influencing health is further analysed by evaluating the effects of socioeconomic factors. As expected, the distribution of the risk of being ill varies substantially by differences in conditions or types of disease. In the case of acute diseases and diarrhoea, those with less education are more likely to report an acute illness. However, this gradient does not hold as strongly in urban areas. Similarly, diarrhoea is generally found in farmers living in villages. People with higher levels of socioeconomic status are more able to improve living conditions and to gain access to preventive care (Roa and Richard 1984; Lemkow 1986; Grosse and Auffrey 1989). According to this view, having a latrine is a good example of health interventions that decrease the incidence of acute diseases for rural villagers with higher socioeconomic status.

Whereas education is an important factor for understanding acute diseases, among chronic diseases, occupation is the strongest predictor of whether one is ill: professional and white-collar workers are less likely to have a chronic condition. When specific diseases are examined, farmers are less likely than those in other occupations to be sick from chronic affluence diseases such as cardiovascular and chronic respiratory diseases. The risk of having one of these diseases is not higher for professional and white-collar workers than for blue-collar workers. As for peptic ulcer, farmers and blue-collar workers are more likely to have this disease than are professional and white-collar workers.

The association between occupational status and chronic degenerative diseases and peptic ulcer can be accounted for by differences in working conditions, unhealthy behaviours, and financial and psychological resources (Bunker, Gomby and Kehrner 1989). Blue-collar workers are exposed to more hazardous agents on the job, and their jobs are often stressful because of the work pace, scheduling, and long hours. Furthermore, blue-collar workers may cope with psychological and physical stress by drinking, smoking, and engaging in other risk behaviours. As discussed earlier, the frequency of drinking alcoholic beverages tends to rank highest among blue-collar workers, especially men, as does

cigarette smoking. These factors may put blue-collar workers at high risk of chronic degenerative diseases. Likewise, use of anti-pain medication, by farmers and blue-collar workers to relieve physical pain from heavy jobs contributes to peptic ulcer. In contrast, professional and white-collar workers are more likely to have a richer diet, to work a sedentary job, and to drink alcohol frequently. This research finds that among men, professional and white-collar workers tend to drink alcoholic beverages more often than farmers. Professional and white-collar workers are less likely to smoke cigarettes, but those who do, smoke more heavily than farmers. These factors may increase their risk of degenerative diseases compared to farmers.

When the effects of high-risk behaviours on chronic sickness are investigated, it is found that smoking and drinking have little impact on any chronic sickness. The only disease found to be related to smoking is peptic ulcer, with smokers more likely to have peptic ulcer than non-smokers. In addition, users of anti-pain medication are more likely to develop peptic ulcer than non-users. These results suggest that occupational status affects the chance of getting peptic ulcer directly and indirectly through smoking and using anti-pain medication. On the other hand, a direct effect of occupation on other chronic degenerative diseases is more important than indirect effects through smoking and drinking. There are two reasons why the effects of smoking and drinking on chronic degenerative diseases do not appear in this analysis. First, available data provide only current status of smoking and drinking which may not reflect the risk factors intended in this study because some smokers and drinkers may quit these habits when they become ill. Secondly, the effects of smoking and drinking on chronic diseases (i.e., lung cancer and cardiovascular diseases) are either cumulative or lagged. For example, Murray, Yang and Qiao (1992) suggest that smoking-attributable mortality mostly involves the elderly. Thus we would not expect to find many long-term health effects of cigarette smoking or drinking among economically active people.

Policy implications

As adult health problems in Thailand vary substantially between urban and rural areas and socioeconomic strata, improving adult health is one of the greatest challenges for health-policy makers. Such an epidemiological diversity of adult health problems demands an appropriate health policy formation. Traditionally, physicians have been concerned with providing curative medical care; now their role has expanded to include a range of activities intended to prolong life, prevent diseases and disability, and promote health. Three strategies for improving adult health are preventive health services, health protection, and health promotion (Breslow 1987). This study suggests that the poor in rural areas continue to need health education, sanitary facilities and preventive services. Additionally, rural villagers tend to misuse medication such as anti-pain drugs. Information on how to use anti-pain medication, and its side-effects, as well as other methods for pain relief (e.g., massage) needs to be distributed to farmers and blue-collar workers.

Finally, this study suggests that health protection and health promotion in Thailand are not well established. Not only the government but also the private sector should provide information and knowledge to the population in order to change unhealthy behaviours. Although this study indicates that smoking and drinking have little impact on diseases, these risk behaviours are accepted as important causes of many chronic diseases. The success of changing smoking and drinking habits requires not only more efficient health-education programs but heavier regulation and taxation of cigarettes and alcoholic beverages as well.

References

- Breslow, Lester. 1987. Setting objectives for public health. *American Review of Public Health* 8(13):289-307.
- Bunker, John P., Deanna S. Gomby and Barbara H. Kehler, eds. 1989. *Pathways to Health: The Role of Social Factors*. Menlo Park, California: The Henry J. Kaiser Family Foundation.
- Feachem, Richard G.A., Tord Kjellstrom, Christopher J.L. Murray, Mead Over and Margaret A. Phillips, eds. *The Health of Adults in the Developing World*. Oxford: Oxford University Press.
- Clark, Walter B. 1991. Introduction to drinking contexts. Pp. 249-255 in *Alcohol in America: Drinking Practices and Problems*, ed. Walter B. Clark and Michael E. Hilton. Albany: State University of New York Press.
- Dutton, Diana B. 1986. Social class, health, and illness. Pp. 31-62 in *Applications of Social Science to Clinical Medicine and Health Policy*, ed. L.H. Aiken and D. Mechanic. New Brunswick: Rutgers University Press.
- Grosse, Robert N. and C. Auffrey. 1989. Literary and health status in developing countries. *Annual Review of Public Health* 10: 281-297.
- Hilton, Michael E. 1991. The demographic distribution of drinking patterns in 1984. Pp. 73-87 in *Alcohol in America: Drinking Practices and Problems*, ed. Walter B. Clark and Michael E. Hilton. Albany: State University of New York Press.
- Jamison, Dean T. and W. Henry Mosley. 1991. Disease control priorities in developing countries: health policy responses to epidemiological change. *American Journal of Public Health* 81(1): 15-22.
- Lemkow, Louis. 1986. Socio-economic status difference in health. *Social Science and Medicine* 22 (11):1257-1262.
- Mosley, Henry W., Dean T. Jamison and Donald A. Henderson. 1990. The health sector in developing countries: problems for the 1990s and beyond. *Annual Review of Public Health* 11:335-358.
- Murray, Christopher J.L., Gonghuam Yang and Xinjian Qiao. 1992. Adult mortality: levels, patterns and causes. Pp.23-111 in *The Health of Adults in the Developing World*, ed. Richard G.A. Feachem, Tord Kjellstrom, Christopher J.L. Murray, Mead Over and Margaret A. Phillips. Oxford:Oxford University Press.
- Murray, Christopher J.L. and Richard G.A. Feachem. 1990. Adult mortality in developing countries. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 84:1-2.
- Omran, Abdel R. 1971. The epidemiologic transition: a theory of population change. *Milbank Memorial Fund Quarterly* 49(4):509-538.
- Pan American Health Organization. 1990. Adult health in the Americas. Washington D.C:Regional Office for the Americas for the World Health Organization.
- Phillips, David R. 1991. Problems and potential of researching epidemiological transition: examples from Southeast Asia. *Social Science and Medicine* 33(4):395-404.
- Porapakkham, Yawarat. 1986. *Levels and Trends of Mortality in Thailand*. Asian Population Studies Series No.77. Bangkok:United Nations/ESCAP.
- Roa, P.S.S. and J. Richard. 1984. Socioeconomic and demographic correlates of medical care and health practices. *Journal of Biosocial Science* 16(3):343-355.
- Sethapongkul, Supamas. 1992. The impact of socioeconomic factors and health interventions on adult morbidity in Thailand: a multi-level analysis. Ph.D. Dissertation, Indiana University (forthcoming).
- Soll, Andrew H. 1989. Duodenal ulcer and drug therapy. Pp. 814-867 in *Gastrointestinal Disease: Pathophysiology Diagnosis Management*, ed. M.H. Sleisenger and J.S. Fordtran. Philadelphia:W.B. Saunders Company, Harcourt Brace Jovanovich Inc.
- Timaeus, Ian M. 1991. Adult mortality: levels, trends, and data sources. Pp. 80-100 in *Disease and Mortality in Sub-Saharan Africa*, ed. Richard G. Feachem and Dean T. Jamison. Oxford:Oxford University Press.
- Wynder, Ernst, ed. 1981. *The Book of Health*. New York: The American Health Foundation.

Book Reviews



Prisoners of Ritual: An Odyssey into Female Genital Circumcision in Africa. By Hanny Lightfoot-Klein. New York: Harrington Park Press, 1989. xii + 306pp. Paperback.

In this curious mixture of the author's personal travel experiences, anecdotes, case histories, and a descriptive review of female circumcision and infibulation mainly as practised in the Sudan, Lightfoot-Klein manages to convey a lot of information on the subjects – without giving any tangible means of evaluating the significance of this information.

The preface sums up the approach taken:

The roads I have traveled and the information I have gathered represent merely one woman's lone trek through some of the less frequented areas of Africa. Mine was a quest for understanding (p. ix).

By combining a romantic travelogue style with that of a more systematic approach to the phenomenon, practice and consequences of female circumcision, she leaves the reader who is interested in 'facts' very frustrated. This is not to deny that the use of her personal experiences, encounters and conversations with Sudanese women and men, provides a wide and sympathetic perspective on the variety of attitudes, but the fact that she rarely tries to coordinate or conclude anything from her case examples leaves one wondering to what extent a particular attitude was representative or unique, and also how much people were lying about this very private subject. The case histories are often very powerful and moving accounts of personal experience which outline not only suffering and pain but also positive attitudes towards physical sexual relations.

After a general chapter describing the various forms of excision and infibulation and their distribution in Africa, Lightfoot-Klein goes on to describe the situation in Sudan today, where the evidence from both reports and her interviews shows that 'instances of non-circumcision and non-infibulation are still exceedingly rare' and that in reality the practice is spreading into non-Arab areas where the form of infibulation seems to be even more severe than in the areas where it was traditionally practised. There are descriptions of the procedures and their consequences for both the young girls when circumcision takes place (usually between four and eight years old) and for women when they marry and give birth, and of the serious consequences the procedure has for female health. Most operations are performed without analgesics or anaesthetic and a variety of complications involving shock, haemorrhage and infection occur at that stage. After infibulation, when often only a pinhead-sized hole is left, many girls have severe problems in urinating, and long and painful menstrual periods because the blood cannot be evacuated. At marriage, penetration by the husband is painful, it may take several months, and sometimes the woman has to be surgically opened. At each birth she is cut open and often reinfibulated afterwards.

Lightfoot-Klein goes on to analyse the reasons for the persistence, and even expansion, of the practice. Girls, women and men alike believe that female circumcision keeps the sexual organs clean,

helps preserve virginity and is essential if a woman is to find a husband. (Ironically, virginity is easier to fake for a circumcised girl than for a non-circumcised girl, since the former can be sewn up again.) Its persistence is explained by the power of older women who subscribe to these ideas, and the belief by girls and women that circumcision is done for them and for their well-being; also, because it is so ubiquitous, most women are unable to compare their health, sexual experience and pain levels with a non-circumcised woman. In looking at the consequences for women Lightfoot-Klein concentrates on their ability to obtain pleasure from sex and to reach orgasm with the conclusion that 'orgasm exists ... among these drastically mutilated women to a surprising extent and it is far from being rare' although her sample is a self-selected group and who knows to what degree they were being truthful or understood what she was talking about? Though she does discuss this issue. In discussing men's sexual response to female circumcision she documents cases of painful sex, inability to penetrate, and ultimate impotence; the men interviewed are in general opposed to the practice yet powerless to intervene in this 'women's business'. Despite this a new fashion has arisen for reinfibulation after childbirth - which the women say the men want - thus reinforcing the clear theme of total lack of communication between men and women on all things sexual.

Two brief chapters cover clitoridectomy in Europe in order to treat 'illnesses' such as masturbation and mental illness, and male circumcision. The purpose of these chapters seems to be to try and remove the idea that female circumcision as practised in the Sudan is exotic, primitive or remote although the extent, the reasons and the health consequences of Sudanese practices tend to deny this aim.

Old personal anecdotes about the author's travels through Sudan, ideas she has had, people she has met, with no obvious reason for inclusion in a book on circumcision except that they present her picture of the country and context, are interspersed with interviews with male and female doctors who, in general, oppose the extreme pharaonic circumcision and infibulation. They can by no means be taken as representative of even the educated liberated minority in Sudan, since they were those people who were willing to be interviewed on the subject, and were certainly aware of the attitudes held by the author. These are followed by another series of short personal histories by women of their circumcisions, the consequences and what they plan to do for their children.

Even among this self-selected subgroup, many women intend to circumcise their daughters albeit in a reduced manner. In one case a woman said emphatically that she would not circumcise her daughter, yet on the author's return the girl had clearly been operated on. This is the key problem to the presentation: how much can we believe of these case histories?

University-level education and foreign travel seem to be the only factors changing attitudes towards, if not practice of, infibulation and severe circumcision. Amongst the tiny majority of university-educated and well-travelled women, there are some who are bent on change, because of their own personal suffering and because of their exposure to other ideas and customs. Men too, of whom there are more who have travelled and had sexual experience with non-circumcised women, also talk about change, although it is clear that they have little power faced with women's control over girls. Clearly if change is going to occur, it is not going to be through legislation, which already exists but is constantly bypassed, but through education and contact with other cultures. However, with the current levels of education for girls in Sudan, held back by many of the same social factors which promote infibulation and circumcision, the prospects for change are not bright. In the 1979 Sudan Fertility Survey only 14.2 per cent of women aged 15+ had completed primary school education, though this rose to 34.2 per cent for those aged 15-19 (Sudan Fertility Survey, 1979, Principal Report, Volume II, Table B6).

For those with a general interest in female circumcision and infibulation in Sudan this book provides a readable, if somewhat infuriating and idiosyncratic introduction. Anyone more interested in

either concrete evidence of the effects of the practice on health, fertility and wellbeing, or the degree to which socioeconomic or political factors are initiating change, will only find it frustrating.

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Deadly Dust: Silicosis and the Politics of Occupational Disease in Twentieth-century America. By David Rosner and Gerald Markowitz. Princeton: Princeton University Press, 1991. xiii + 229pp. Paperback US\$29.95.

Silicosis is an occupational lung disease caused by the inhalation of silica dust. The disease, once symptomatic, tends to lead to progressive pulmonary fibrosis and death.

This well-researched book begins with the assertion that 'the story of silicosis is more than the story of a particular crisis in American medicine and public health. Rather it is the story of the discovery of chronic industrial disease and its relationship to industrial society'.

The authors document the explosion in the incidence of silicosis that occurred at the beginning of the twentieth century with the mechanization of the sand, quartz and granite industries. The medical profession was slow to recognize industrial lung disease as a unique entity, partly because the symptoms and signs were not readily distinguishable from tuberculosis, and partly because their approach to health was changing. The authors note that the discovery of the tubercle bacillus in the early 1880s led to the medical profession adopting a narrow physiological and bacteriological approach to the assessment of sickness and disease. No longer was primary importance placed on assessment of an individual's unique social, personal, hereditary and economic circumstances.

The authors then describe the difficulties experienced by workers in their efforts to achieve recognition and compensation, as silicosis became an enormous public health problem. Silicosis moved from being a medical disease defined and debated by the medical profession to a public and occupational health issue controlled by workers in their thrust for improved working conditions, health care and social welfare. The ingenuous response of industry to the petitions by workers and their unions is recorded. The authors also highlight the loss of objectivity suffered by scientists when research was funded by industries holding a vested interest.

The reluctance of the politicians, particularly those at local levels, to legislate and enforce regulations that might have protected the health of workers at the expense of industrial profitability is also enunciated. The sorry saga continues through to 1936 when the Gauley Bridge disaster occurred. At Gauley Bridge approximately 2000 men were employed to dig a tunnel through a mountain of almost pure silica. No serious attempt was made to protect the workers from silica inhalation despite the fact that the dangers of silica dust exposure were widely appreciated at the time. Nearly 1500 men died, mainly of acute silicosis. Poignantly, for those who remember Bhopal, the company was the Union Carbide and Carbon Company.

Although I found this book fascinating, the later chapters are rather repetitive and perhaps more comprehensive than is necessary. I recommend it particularly for students of public health, politics, sociology and medicine.

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Women's Mental Health in Africa. Edited by E.D. Rothblum and E. Cole. New York: Haworth Press, 1990. 98pp. Hardcover US\$19.95.

This volume is a slight and at times naive but always interesting compilation of eight essays spanning a range of topics relating to women's mental health. These topics include spirit possession, AIDS, family planning and maternal health care, sexuality, bereavement, occupational stress and role fulfilment. The authors of the chapters include several women scholars in the region from a variety of academic backgrounds including demography, psychology and adult education. Their studies are located in Sudan, Uganda, Egypt, Zimbabwe and Nigeria.

These essays serve to highlight areas of female experience which are so far rather poorly researched and documented in the region and yet crucial to health and to population and development concerns. They underline the sparse and partial nature of much of the available evidence and the paucity of relevant data. In contrast they highlight the significance and interest of a number of themes, calling attention to crucial potential linkages between, for example, fertility and migration on the one hand and mental wellbeing on the other.

As the writer of the first essay underlines, many of the issues raised need more systematic investigation than that which has been undertaken hitherto, investigation which combines a range of medical, demographic, economic, and social data.

A gender issue of potentially wide-ranging significance, touched upon in Kisekka's chapter on AIDS in Uganda and again in Mhloyi's chapter on sexuality in Zimbabwe, is the link between male sexual aggression and harassment of less powerful women (both in the home and in the workplace), and the spread of disease and death. This demonstrated connection means that current attempts by the International Labour Office and other bodies to further document sexual harassment in workplaces are a matter of urgent concern, since it underscores the importance of promotion of sexual protection for women and men in workplaces.

These studies point to interesting areas for more interdisciplinary research in the nineties and beyond. Since they focus on the stresses and strains of women's changing roles and their health outcomes, they provide a number of crucial insights for researchers seeking to document women's reproductive and productive behaviour.

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Pharmacy and the US Health Care System Edited by Jack E. Fincham and Albert I. Wertheimer. New York: Pharmaceutical Products Press, 1991. xvii + 569 pp. Hardcover US\$49.95, paperback US\$24.95.

The first seven chapters of this book provide a summary and some analysis of the US health system. The emphasis, as would be expected from the title, focuses on the range of programs that include drug distribution in the US; the authors of these chapters, however, generally give a much broader scope. It is evident that some of these schemes in the US have attempted to address the problems of inefficiency and increased costs of health care. Several authors emphasized the continuing cost escalation that will occur with an increasing proportion of old people in the population, many of whom also now live to a greater age.

Considerable discussion of the diagnosis-related groups (DRGs) system is provided in several chapters. This system, which has operated in the US for Medicare payments since 1983, has been widely investigated in Australia as a likely future model for hospital funding. The authors note that, being a prospective payment system, it is designed to promote early discharge of patients from hospital; this has resulted in savings and not merely a shift of costs to other payers. About one-third of these savings have occurred because of a decline in admissions, a result of the Medicare Peer Review Organization (PRO) Program, that monitored hospital admissions through a mandatory system of peer review. Data published after 1989 have not been included in these analyses. An extensive chapter on Managed Health Care will be of value to a wide readership with an interest in health management and administration.

The challenge to pharmacy within an environment of cost management is to implement effective drug therapy regimens that enable shorter periods of drug administration, yet do not increase costs. These therapies must therefore avoid drug interactions and adverse drug reactions; this avoidance is a major factor in ensuring shorter lengths of stay in hospitals.

An interesting contribution for general readership is the chapter on the implications for pharmacy and the community of the new biomedical technologies. A well presented overview of the major developments in this field indicates that 14 biotechnology-based drugs and vaccines were in the marketing approval process, and nearly 70 others were under development in 1988. Since oral administration is inappropriate for many of these drugs new drug delivery methods are well summarized; these are novel and important since repeated administration of these products by injection is inconvenient and uncomfortable. The closely related advances on targeting drugs to specific sites in the body is also reviewed. The authors indicate that it is difficult to predict the overall implications of technological innovations on the health-care system. An issue raised was restriction of drug distribution by drug manufacturers: genetically engineered human growth hormone had been restricted to hospital pharmacists because of a cited insurance reimbursement and diversion potential possibly occurring in the community. A compromise requiring a community pharmacist to supply the name of the patient to the drug company before purchasing the drug raises important ethical and confidentiality issues.

Other topics covered include the pharmaceutical industry, pharmacy organizations, drug distribution, the drug-use process and the provision of pharmaceutical services to subpopulations.

The book is a substantial contribution to the field with relevance outside the US. It indicates to health planners and administrators that appropriate drug usage is an important element in any health-care system.

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African Indigenous Medicine: An Anthropological Perspective for Policy Makers and Primary Health Care Managers. By David Nyamwaya. Nairobi: African Medical and Research Foundation, 1992. vi + 44pp. Paperback.

There now exists an extensive literature on popular medicine in Africa. Much of it underscores the diversity of local knowledge about the body and how best to cure its ills; much of it also suggests that demand for biomedical services need not entail acceptance of biomedical perspectives. Throughout Africa physicians and nurses are consulted and pharmaceuticals are dispensed but the biomedical profession has yet to dominate the marketplace of health and disease. David Nyamwaya seems to share

this view. He tells us that while biomedicine is used by Africans, 'cognitively' popular medicine 'still has the upper hand' (p.3). *African Indigenous Medicine* aims to show health-care planners and providers how they might put popular medicine to better use. Rooted in the twin assumptions that concepts of disease govern responses to illness and that biomedical workers have little understanding of the disease concepts held by ordinary men and women, it describes 'what lay people believe in and do in their health seeking behaviour' and indicates when and how these beliefs and actions should be exploited and supported (p.3).

Nyamwaya deals with a single country (Kenya) rather than an entire continent yet he covers a great deal of ground. Following a brief introduction, he discusses popular ideas about health and illness; types of healers; lay perspectives on healing; negative and positive healing practices; interactions between biomedical workers and local healers; and policy options for indigenous medicine. Each chapter begins with a concise overview; each ends with a concise summary and a series of recommendations. The chapters are illustrated with examples and photographs from a variety of ethnic groups, including the Gusii, the Pokot, the Samia, the Marakwet, the Kikuyu, and the Luo.

The substantive heart of *African Indigenous Medicine* is the chapter on lay perspectives. Here we learn that the majority of Kenyans take an eclectic approach to sickness and that there is no overarching 'hierarchy of resort' that might predict how individuals and families select and combine medical regimens (p.28). We also learn that 'therapeutic actions do not necessarily correspond to those prescribed by custom' (p.32) and that the choices people make about health care are complicated by their social positions, their social networks, and their religious beliefs (p.33). Equally important, we learn that popular medicine is broad enough to accommodate aspects of biomedicine, such as the germ theory of disease (p.28).

One wishes that the author had made more of these findings, or at least had incorporated them into the other chapters. By casting doubt on the primacy of ideas and the autonomy of conceptual systems, they suggest that the assumptions of *African Indigenous Medicine* might profitably be interrogated and the subject matter expanded. When the dictates of 'custom' do not prevent people from going to hospitals and clinics, and popular medical thinking encompasses the germ theory of disease, then surely the limits of the biomedical authority and expertise merit as much consideration as the beliefs of ordinary men and women. When health-care planners and providers are urged to exploit the full potential of indigenous health workers (p.42), then the legal and institutional framework of medical practice and the results of previous 'collaborations' deserve as much attention as the different categories and types of healers on the local medical scene. And when physicians and nurses are urged to emulate their popular counterparts by 'consider[ing] the management of the total patient and not just an individual's physical condition' (p.10), then there should be some indication of why this is desirable, what it entails, and how it might be accomplished under conditions of medical scarcity.

Deciding whether popular medicine works is one of the most pressing issues faced by makers of medical policy in contemporary Africa. In part this is due to the limits of biomedical knowledge, in part to the overwhelming burdens placed upon biomedical services. Nyamwaya's undertaking is ambitious and timely, yet he seems to have cast too narrow a net. Without some sense of the historical, political, and intellectual relationships between popular medicine and biomedicine, it is difficult to move from general pleas for greater tolerance and understanding to more specific advice on how to assess popular medicine's efficacy and how to regulate and train its practitioners. Forty-three pages of text do not easily accommodate the topics the author has singled out, nor allow room for the cultural and historical specificities that are central to both anthropological and policy analyses. One looks forward to Nyamwaya's fuller treatment of these important concerns.

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Anthropology and Primary Health Care. Edited by Jeannine Coreil and J. Dennis Mull. Boulder, Colorado: Westview Press, 1990. xv + 328pp. Paperback US\$32.00.

This collection of fourteen articles is offered as the contemporary counterpart to Benjamin Paul's volume, *Health Culture and Community* from 1955. The editors point out that despite the growth of the field of anthropology and international health, there are no current comprehensive books on the area. They have set out to present the major topics, theories and methods with a historical background and illustrated through work from a variety of geographical settings. They point out that the book includes 'strong critical essays discussing broad macropolitical questions as well as more narrowly focused chapters dealing with important "nuts and bolts" issues'. Given the vitality of the field, this is an enormous, if not impossible, agenda; but the attempt is indeed welcome.

The articles are grouped into five sections: Overview, Critical Perspectives, Extending Primary Health Care into the Community, Ethnomedical Models, and Issues and Methods in Applied Research. The book begins with introductory chapters by each of the editors. Coreil gives a history of the field, charting anthropology's application to the solution of health problems in developing countries. She pinpoints two issues confronting researchers today: the desire of planners for simple answers and the unwillingness of those in authority to give legitimacy to 'unorthodox' (read popular or 'traditional') knowledge and practices. Mull considers the concept of primary health care, summarizing the Alma-Ata program and the development of the primary health care debate since 1978. He contrasts the comprehensive (horizontal) approach with the selective (vertical) one. The latter is likely to remain dominant, he argues, because vertical programs, like immunization and oral rehydration therapy, are cost effective and, with their limited targets, easier to implement and more amenable to measurement. They do not foster community participation and self-reliance, though there may be a good deal of rhetoric about incorporating these virtues of comprehensive primary health care. Assessing the difference between rhetoric and reality, furthering community involvement and advocating community interests are tasks for anthropologists, Mull concludes.

Donahue takes up the role of the anthropologist in reconciling professional and community interests. He considers the importance of power relationships in defining and implementing primary health care, an issue which is touched upon in other contributions as well. Wood's description of how professional health staff in New Zealand tried to limit the activities of Maori Community Health Workers illustrates the same issue. Rubel's case study from Mexico shows the disjunction between professional interests and those of the community; the concerns of the medical establishment (personified in the medical student doing his compulsory rural service) and those of the locals move them in opposite directions.

Velimirovic's paper on the integration of traditional and Western medicine seems to me to relate to the issue of professional and community interests as well. This critique of WHO policy on Traditional Medicine is no doubt meant to be provocative; I found it tendentious but other readers may be stimulated by it. The point that most health problems are not going to be solved by supporting Traditional Medicine is unexceptionable. But simply asserting the superiority of 'scientific medicine' while ignoring questions of communication, accessibility, community involvement, and quality of biomedical health care is unproductive. The critique of the rhetoric about Traditional Medicine is well

taken. But Velimirovic falls into another kind of rhetoric, because he sets up a simple dichotomy. Instead of operating with ideal categories like Western (or Scientific) and Traditional Medicine, anthropology must look at the kinds of health care that are actually available in given communities. When Velimirovic touches on the issue of what he calls 'hybrid medicine', it is only to blame it on endorsements of 'TM'; it would be more useful to ask why and how Western medicine is adapted to a particular setting by persons whose interests and perspectives contrast with those of health professionals.

Closely related to the anthropological interest in the opposition between professional and community positions is the concern with communication and contrasting perceptions of sickness and health. Three articles grouped in the section on 'Ethnomedical Models' pursue this theme, as does Griffiths's piece on nutrition education in Indonesia. For the most part, the authors are not content simply to document the existence of ethnomodels; they consider the implications of particular models for health behaviour and the ways in which communication between health professionals and lay people may proceed. The article by Mark Nichter on vaccinations in South Asia is a specially fine example. It is rich with information garnered from extensive fieldwork in south India and Sri Lanka about how 'Western medicine' is in fact realized, communicated and perceived in particular communities.

A chapter by Jordan on technology and the social distribution of knowledge identifies matters that should occupy anthropologists, medical and otherwise, and that are central to programs of health development. She argues that the introduction of advanced obstetrical technology, such as delivery tables, skews information and power towards specialists. At the same time, the symbolic value, as opposed to the use value or efficacy, of advanced technology makes it attractive. In her conclusion Jordan reminds us that 'appropriate technology' is a central tenet of primary health care, but that its social implications have hardly been explored. This seems to be a pressing problem of further research. Jordan restricts her discussion to obstetric technology; it would be instructive to examine and compare the social aspects of other kinds, as well. The Maori case presented by Wood shows that otoscopes were seen as appropriate technology by community health workers, but that doctors sought to maintain their own monopoly on this type of equipment. In this instance, the wider adoption of more advanced technology was seen to broaden the distribution of knowledge. The use of pharmaceuticals, which constitute the core technology of biomedicine, raises still other, even more complex, issues in the sociology of knowledge and technology.

I have pointed to general themes and conceptual issues raised in this book because I think that a primary contribution of anthropology to health research should be to ask the broad questions, explore power relations and contextualize health problems. However, much of this volume is devoted to studies of particular health development projects and methodology discussions. It is decidedly a book about applied anthropology, that is, about how anthropologists can facilitate the implementation of plans to improve health. In this respect, it is sensible, clear and useful, and likely to be of equally great interest to people in the field of international health who are not professionally-trained anthropologists. Personally, I would have preferred a whole collection of 'critical perspectives' with a separate handbook about nuts and bolts. But this is a helpful step.

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Health Care Patterns and Planning in Developing Countries. Edited by Rais Akhtar. Connecticut: Greenwood Press, 1991. xxv + 334pp. Cloth US\$65.00.

This book brings together sixteen articles focusing on the geography of health and the decision processes that influence it in the third world. It is a welcome contribution given the links this perspective provides to population studies and ecology, and thus to the interdisciplinary study of health.

In his introductory chapter Akhtar throws into relief the great distributional disparities in health resources between countries and within regions of the world. Lack of planning, says Akhtar, or the use of inappropriate planning models on the part of health authorities leads to underutilization and the purchase of inadequate technologies, increasing the difficulty to cope with health problems. The author concludes that formal methods for determining optimal locations for scarce resources are needed to help overcome the problem of maldistribution.

The first section of the book purports to analyse planning issues raised by primary health care. However, there is a failure to address in this section the main issue raised in the general introduction and developed in later sections: planning the spatial allocation of health resources in developing countries. The section rather appears as a series of suggesting articles for the geography of health. Ian D. Askew poses the rhetoric-reality disparities in community participation, analysing why governments tend to disenfranchise the needy in spite of the support given to primary health care. The author compares governmental and private agencies with respect to project and program organizations, recognizing specific limitations in their approach to the community. Non-market processes used to channel national and international resources to the local level lead to a bureaucracy that stifles truly decentralized planning and participation. The question is thus how to blend external and internal resources through processes that allow participation and adaptive innovation. To this end the author suggests differentiating the organization of the community from the governmental bureaucracy, thus establishing development partnerships at the local level. In order to tie this proposal with the general theme of the book it has to be asked how such partnerships can depend in turn on local and regional political processes that could lead the centre to allocate resources and deliver actions in terms of locally defined needs and aspirations.

Also, in the first section, Oscar Gish addresses a key question for regional planning of health: what are to be understood as minimal criteria within the primary health care (PHC) movement? It is a pity that such an important issue is exemplified on a rather general and now outdated analysis of Mexico. Gish argues that the Alma Ata declaration is so ample in its definitions that PHC can lead to the definition of basic actions to satisfy minimal needs, or to a wide-ranging redefinition of health-care organization. In the first case minima are defined with respect to the current maldistribution of resources, thus legitimating it. So long as the overall distribution of resources is not questioned, then resources will not be made truly available to the needy. In this context the editor could have invited the discussion of whatever attempts there may have been to establish policies aiming to set upper limits on the regional availability of specific resources. However, Gish goes on to suggest avenues for research on coverage and resource allocation to achieve minimal outputs and health outcomes. He uses the case of Mexico as an example.

The last two articles of section I describe in more detail the regional health systems and policies of the Philippines and Nicaragua. The latter demonstrates the interplay of conflicting interests within a rapidly changing political environment. The professional dominance of physicians was able to limit and thwart efforts towards the more regionalized and participatory health system proposed by *brigadistas* and other grass-roots interests.

Part II of the book addresses socioeconomic and political aspects of health care through a fairly detailed presentation of the service sector and planning situation in Zambia, India and Ethiopia; the case study of the Philippines presented in the previous section is also relevant here. The studies give an impressionistic image of the health sectors in these countries. They contrast with the very technically detailed studies presented in Part III 'Modelling the allocation of health care provision'. The emphasis here is in the use of location-allocation models as tools for the establishment of objective functions that can guide decentralized planning and complex decision-making. Such articles are usually presented in the context of financial planning and fail to criticize actual decision making. In this book, however, the technical perspective is well introduced and leads to a holistic perspective.

Part IV, the last section of the book, attempts to focus on 'historical context and traditional versus modern health care'. The book ploughs through six short but well structured articles offered by native authors, chiefly from African countries. A common concern with equity and health-system development permeates the pieces.

The editors of this book succeeded in bringing together a group of authors focusing on the plight of health equity in developing countries as seen from a geographical perspective. However, there is no clear view of what the 'health care patterns and planning' are at a general level, that is, when comparing regions of development. The operations-research bias of the book and the exemplification of location-allocation models lead to a formal perspective of the decision process that privileges intra-country and local area analysis. This is in spite of the concern voiced by the editors with cultural values and the historical perspective that should have led to a more general overview. This imbalance would have been corrected had the editors ventured to write a concluding article pulling together the wealth of intimate experiences offered by their contributors.

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