

Age bias, but no gender bias, in the intra-household resource allocation for health care in rural Burkina Faso*

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Abstract

Household survey data, time allocation data, and qualitative interviews were used to examine whether households allocate their resources for health care differently between age and gender groups. Households allocated significantly fewer resources to the health care of sick children compared to that of sick adults. In contrast there were no such differences with regard to gender. The underlying household rationale is to concentrate its resources spent for health care on productive members rather than to spread them equitably among all its sick members. While children are not productive, women were shown to contribute as much to household production as men, hence their health is valued equally with that of men. Unless we understand intra-household biases in resource allocation, policies will be undermined. Further research is needed to test the hypothesis for the households' preference of production maintenance over health maximization.

Infant mortality and 1-4 year mortality rates are still several times higher in developing countries than in developed countries. With an infant mortality rate of 132 per 1000 live births and an under-five mortality rate of 205 per 1000, Burkina Faso is among the 20 countries with the highest mortality rates in the world (World Bank 1994). The comparative numbers for the US are 9 per 1000 (IMR) and 12 per 1000 (under-five mortality rate). In contrast, age-specific mortality rates in adults are very similar in developing and developed countries.

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Several reasons for this excess childhood mortality have been given, including repetitive infections, especially with malaria; and malnutrition, especially in the weaning period. We pose the hypothesis that these risk factors are compounded by a smaller allocation of household resources, both money and time, to health care for children than for adults, and by less use of modern health care. If this were proved to be true, the effect of the highly efficient

tools of the 'child survival revolution', such as oral rehydration and antibiotic treatment for acute respiratory infections, would be reduced.

There is a large body of literature on gender bias in the allocation of health care and food within households from South Asia (Chen, Huq and D'Souza 1981; Sen 1984; Das Gupta 1987). In contrast, studies looking at the allocation of resources within households in West Africa have not been able to find any gender bias: Haddad and Reardon (1993:274-275) using stratified outlay equivalent analysis on the International Food Policy Research Institute (IFPRI) data set in Burkina Faso could not identify any differences in expenditures for boys and girls. The authors did not analyse health care expenditures separately. Deaton (1993) found that while additional children did reduce adult consumption, the effect was similar for boys and girls. He concluded that there was little evidence of any sex bias in the allocation of food. The lack of sex bias in the intra-household food distribution is consonant with anthropometric studies which consistently do not find any difference between the nutritional status of boys and girls (Svedberg 1990).

With regard to age bias in health care, the literature is much sparser: Caldwell, Reddy and Caldwell (1983:196) noted from their study in South India that 'the young and very old are underrepresented among patients'. They attributed this to parents' perception that many childhood ailments were signs of metaphysical, 'non-medical', rather than medical disorders and thus not amenable to Western-type treatment. They gave a rich description of such non-medical causes of childhood diseases which included divine retribution or punishment, transgression in a previous life, ghosts, the evil eye, and spirit invasion. Caldwell et al. concluded that such cultural concepts of childhood disorders explained the low health care use by children.

Comparing age-specific health care use in Tamil Nadu and Uttar Pradesh, Basu (1990) noted that a higher proportion of children in the former state did not receive medical attention. However, she did not attribute this observation to cultural differences, but rather to differences in maternal employment which made it more inconvenient for Tamil mothers to take their children to the hospital. She concludes that 'once accessibility to services is controlled for, cultural origin is not a serious barrier to their utilization' (Basu 1990:279).

Singh, Gordon and Wyon (1962) found that sick neonates in Punjab had the lowest level of care of any age group. The neonatal mortality rate was extremely high, 73 per 1000. Of the neonatal deaths, half were unattended and the remainder were seen by the spiritual healer. Up to the age of 15, low-cost health care alternatives were chosen in the case of illness. Only adults were reported to use high-cost health care choices, such as seeing a physician.

Data from West Africa on age differentials in health care use or expenditures are much sparser. Two earlier papers (Nougara et al. 1989; Sauerborn et al. 1994) in which two of the current authors were involved reported age differentials in the use of modern health care from a district adjacent to the current study zone. They found that sick children under five years received significantly less modern health care than sick adults. Controlling for self-reported severity of illness, distance, quality of health services, costs of care and maternal education, age ranked second only to perceived severity in its relationship with health care use. Demand for outpatient services was found to be very price-elastic for newborns ($\eta = -3.64$) while it was inelastic for adults ($\eta = -0.27$). The authors did not analyse intra-household allocation of financial and time resources for health care by age and sex and did not provide any insight in why households make the choices and allocate their resources the way they do.

However, if existing intra-household inequalities are ignored or if they are acknowledged but poorly understood, the effectiveness of policy is likely to be undermined (Haadad and Kanbur 1990; Haddad and Reardon 1993).

This study attempts to fill the gap by comparing the allocation of household resources (time and money) for child care with that for adult care and between health care for girls and

boys. We make extensive use of qualitative in-depth interviews and case studies to shed some light on the households' rationale for allocating their resources the way they do.

Population and methods

The study population showed the pattern of high fertility and moderately high mortality typical of Sub-Saharan Africa. The crude birth rate was 47.3 per 1000 and the crude death rate 12 per 1000. The average household comprised 8.5 individuals. Polygamy was common: one in three household heads had more than one wife.

Formal education was very low and showed a bias against girls. The percentage of individuals who had attended more than one year of formal schooling was 8.9 for men and 4.3 for women. The majority of the study population was Muslim (59.2%), whereas 29.6 per cent report themselves to be Christian and 10.9 per cent to believe in African religions. It is safe to assume that this latter percentage underestimates the influence of animist religion. The study population was composed of five major ethnic groups who spoke their own languages. Most households, however, used Dioula as a *lingua franca*.

The vast majority of households lived by subsistence farming, with millet, sorghum and groundnuts being the main staples. Average annual household income was 143,248 F CFA¹, of which 6.1 per cent was spent on health care. The average daily wage rate was 289 F CFA, with no difference between men and women (Sauerborn et al. 1996a, 1996b). Women work extensively in the household's fields, particularly in the sowing and harvesting time. In most ethnic groups in our study population, women had their own plots of land or gardens on which they worked in addition to the general household fields. The harvest of these 'women' fields and any receipts from produce sales belong to the women.

We used three study methods: a household interview survey, a time allocation study and qualitative interviews.

The survey was carried out on a representative two-stage cluster sample of 566 households, comprising 4,820 individuals. Using a recall period of one month, information was gathered on past perceived illness, healer choice as well as the financial and time costs the households of the sick individuals had incurred. Time costs included both the days lost to illness by the sick household member and the days lost by any healthy household members tending the sick or accompanying them to a distant treatment site. Bias was defined as significantly less health care expenditures on illness episodes and a significantly smaller probability of seeking modern care in children under nine years compared to adults (age 10 - 64).

The time allocation study was carried out on the same household sample based on the recall of 'yesterday's activities' (White 1982; Acharya 1982). We classified activities in eight major categories shown in Table 1, which were further subdivided into 56 single activities. In our classification of activities we followed the one used by McSweeney (1979) in her time allocation study of Mossi households in Burkina Faso. Activities A to D in Table 1 were defined as 'household production' (Sauerborn 1994).

In the qualitative study component, we examined household decision-making during 30 severe illness episodes through interviews with the household head, the sick individual or, in the case of sick children, with their main caregiver. In addition, we interviewed 21 'key informants' comprising village midwives, village heads, religious leaders, and members of village organizations, such as the Young Farmer Association of Bourasso, who were interviewed to further explore the rationale of the resource allocation between adult and children, and between boys and girls. Interviews were translated from the five local languages

¹At the time of the study, the exchange rate was 265 F CFA to US\$1

into French, and coded using the software package 'Ethnograph'. The coded interview transcripts were the basis for a conceptual analysis (Maxwell and Miller 1994). In addition, seven household case studies permitted contextual analysis of intra-household resource allocation (for details, see Sauerborn 1994).

Table 1
Groups of activities used for time allocation study. Groups A to D are defined as productive activities. Modified after McSweeney 1979.

Activity group	No. of coded activities
A. Agricultural production	12
B. Food processing	4
C. Crafts	14
D. Household work	8
E. Community activities	4
F. Personal needs	4
G. Leisure	10
H. Other activities	not coded

Results

The burden of death and illness in children

Age specific mortality

Based on indirect demographic techniques (UN 1983) applied to a health census in the study area, Sauerborn and Garenne (1993) estimated the probability of children dying before year one and between the ages of one and four to be $1q_0=0.074$ and $4q_1=0.119$ respectively. There were no statistically significant gender differences in these mortality indices.

Age specific morbidity

The age distribution of illness in the sample is not proportional to the age distribution: infants represent only 4.85 per cent of the population, but account for 14.64 per cent of illnesses. Figure 1 displays the frequency of reported illnesses by age. It shows the familiar u-shaped pattern with a high illness burden at both age poles.

The frequency of reported illnesses did not differ significantly between boys and girls.

Severity

An illness was labelled 'severe', if it was perceived as 'life-threatening' by the respondent; in the case of children this was the mother or any other main caretaker. Aggregated across sex and age, 27.2 per cent of reported illness episodes were perceived as severe. Illness in children was regarded more often as severe than illness in adults (Chi square 6.7, DF 1, $p=0.009$). Between boys and girls, however, there was no significant difference in perceived severity of illness.

Figure 1
Frequency per year of reported acute illness episodes, by age group, aggregated across all types of acute illnesses

Children's use of health services

There were five treatment options available in the study area: (1) home treatment, which was carried out almost exclusively using traditional herbs and roots (Sauerborn and Nougara 1993); (2) consulting the traditional healer, which involved substantial travel costs and fees (only second to modern care, see Table 2); (3) modern outpatient care at the dispensary; (4) inpatient care at the district hospital in Nouna; (5) the local community health worker, a village member trained in short courses to treat some mild illnesses. Other treatment options, such as direct purchases of drugs at pharmacies, or treatment by neighbours, or members of the extended family, were rarely chosen. The choice of treatment options was statistically significant between adults and children (Chi-square=41, DF=5, $P < 0.00001$). Table 2 shows healer choice broken down by two age-groups, under ten years and equal to and above ten years. This age cleavage point will be chosen henceforth in the study. It is based on the

contribution of age groups to household production. Children of ten years and over spent almost as many hours on household production as adults (see Figure 3).

Children were less frequently taken to both the modern health services and the traditional healer. More than two-thirds of children (67.2%) are treated within the household, compared to only 45.3 per cent of the adults. Conversely, 22.6 per cent of those aged ten or over are treated in either the hospital or the dispensary, while the proportion of children taken to these facilities in the case of illness is only half of this (11.5%).

Health care choice did not differ between boys and girls.

Table 2
Treatment choice by age group

Source of treatment	Mean costs/ episode F CFA (S.D.)	Age group			
		0-9 years		10 years and over	
		N	%	N	%
Household	76 (245)	176	67.2	227	45.3
Dispensary	1,432 (2,560)	22	8.4	61	12.2
Hospital	6,939 (17,261)	8	3.1	53	10.6
Healer	656 (1,965)	29	11.1	98	19.6
VHW	221 (462)	15	5.7	22	4.4
Other	364 (678)	12	1.6	40	8.0

Household costs incurred for child health care

Financial costs by age

Financial costs included all household expenditure involved in seeking care: transport, fees, drugs, and living expenditure at a distant treatment site. These costs varied substantially with the choice of treatment, as Table 2 shows. In view of the different use pattern, it is therefore not surprising that health care expenditures for the adults were more than four times those for children, on average 1,163 FCFA and 234 F CFA respectively. Though the variance was considerable, analysis of variance indicated that this difference was significant ($p < 0.015$). This was in spite of the fact that children's illnesses were perceived as significantly more severe than those of adults. Mean health care expenditures for boys and girls were 128 and 186 F CFA respectively. However, the difference was statistically insignificant.

In addition to those resources mobilized within the household, we found in many instances transfers from other households to the household of the sick to help meet the demands of illness. However, this 'community' support carried the same bias in favour of adults as the household support: 796 F CFA is the average amount transferred to the household of the sick for the illness episode of an adult (over ten), whereas the average transfer for a child was 264 F CFA. Figure 3 shows the result of case studies of two households: one household lost a child of two years, whereas the other household lost an adult of 37 years of age. Health care expenditures for the child were less than half of those incurred for the adult. For the child expenditures for her burial were minimal and there was

no funeral. For the adult, the index household spent considerably more on the funeral than on treatment (see Figure 2).

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Figure 2

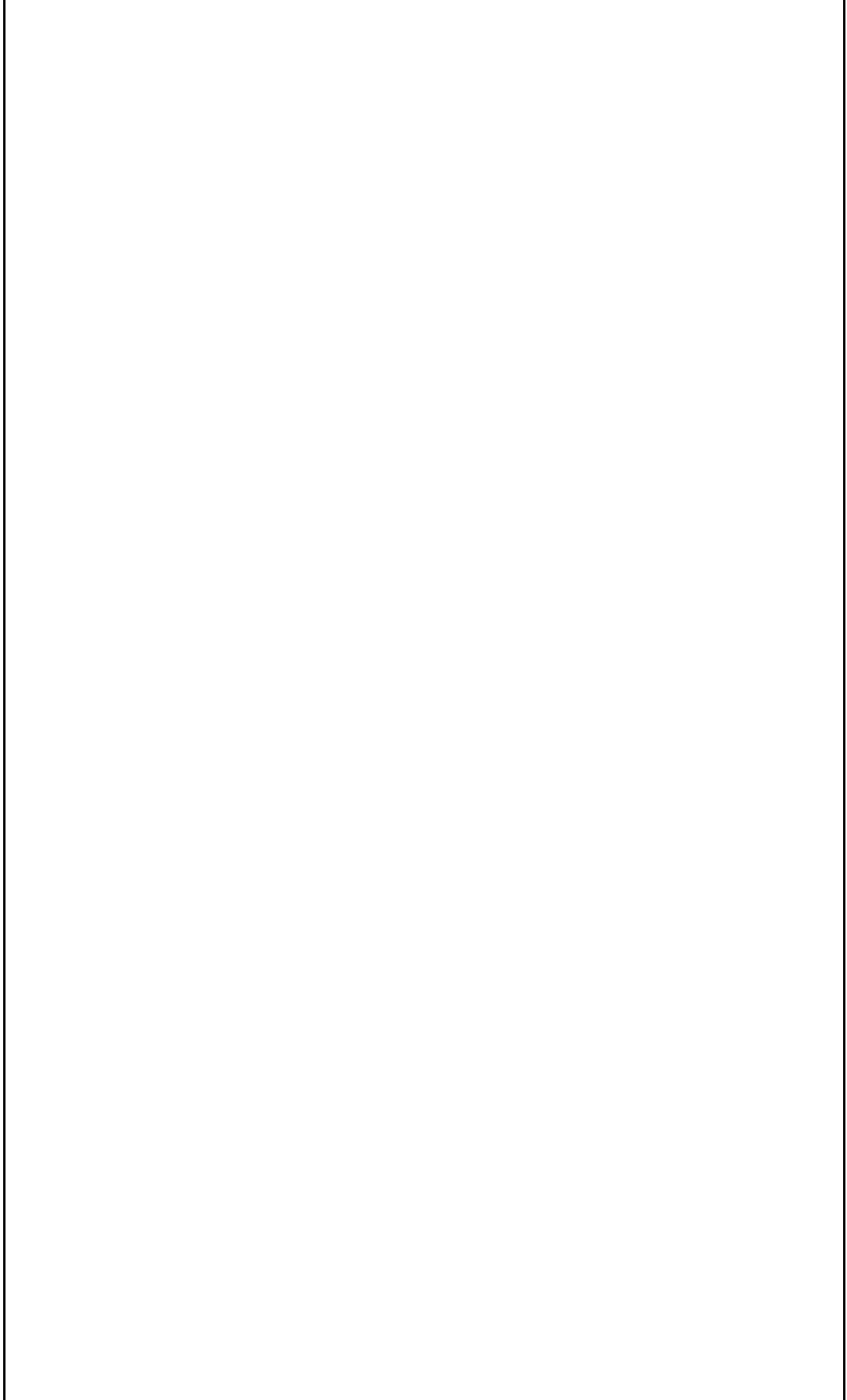


Table 3
Intra-household resource allocation for health care as a function of age

Household decision	Age group		
	under 10	11-59	60 and over
Type of treatment	Home treatment	Health services	Home treatment
Expenditures for health care	+	+++++	+
Expenditures for burial and funerals	+	+++	+++++
Time costs of care	++	++	++
Support from other households to cover health care expenditures	+	+++++	+

Household time costs incurred for child care

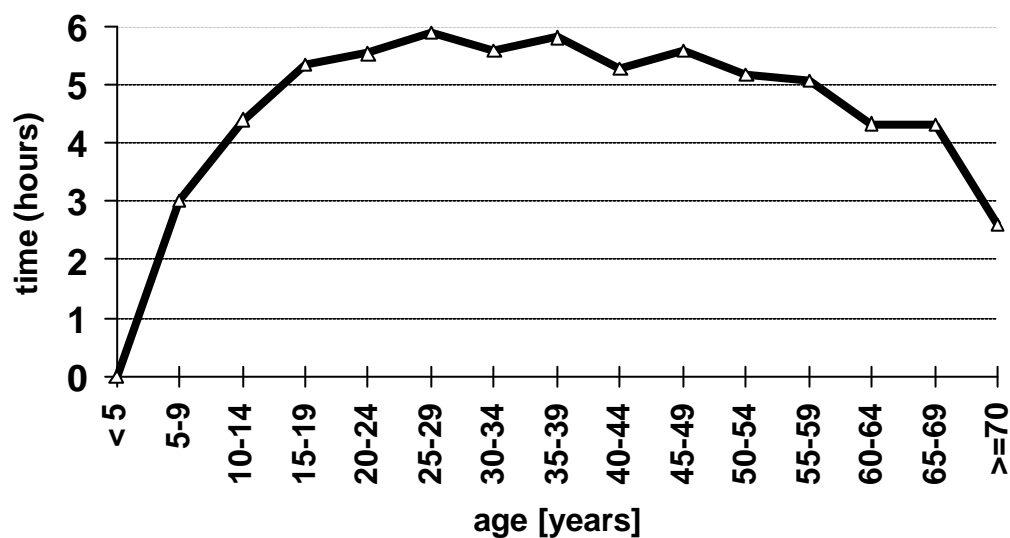
The average time spent by healthy household members to provide care for sick children was 1.97 hours per illness episode. This was not significantly different from the time spent on sick adult household members (2.89 hours, $p=0.26$). Table 3 summarizes the age-specific differences in household decision-making derived from the case studies based on qualitative interviews.

Children's contribution to household production

Household production was defined as any activity needed for the maintenance of the livelihood of the household. It included agricultural production, animal husbandry, food processing and preparation and home production: cooking, fetching water etc.

We used as a proxy of production the amount of time per day that each household member spent on production (activities A to D in Table 1); Figure 3 displays the average number of hours worked per day at different ages. The amount of time spent on daily production is significantly lower in children under ten than in adults of 11-64 years ($p < 0.00001$, analysis of variance). Similarly the age group of 11-64 years contributes significantly more time to household production than household members of 65 years and over.

Figure 3
Average time per day spent on household production by age



Women's contribution to household production

In the dry season, the contribution to household production, measured as the mean number of hours spent on productive activities, was significantly greater for women than for men as Table 4 shows. However, in the rainy season men had a small lead in production over women (Sauerborn 1994).

A case study on how a household substituted labour lost through the illness of a 56-year-old woman suggests perceived equality of productivity of men and women. In order to compensate for the loss of 28 days of his wife's work in the fields during harvest time, the husband hired 30 days of male wage labour.

Table 4
Mean hours per day spent on household production, by gender.

Type of household production	Mean hours per day spent on household production		
	women	men	significance of differences of the mean
Farming/ animal husbandry	0.4	1.9	*
Food processing	1.4	0.1	*
Crafts	1.1	1.3	ns
Housework	2.8	0.5	*
Total production	5.7	3.8	*

Note: * = $p < 0.00001$ (ANOVA)

Households' reported rationale of different allocation of health care between age groups

The analysis of the qualitative interviews suggests that a middle-aged adult is perceived as a productive 'asset' for the household production. In contrast, the stream of future benefits economists associate with young children is not perceived as such. One way of exploring preferences was by asking the hypothetical question to five key informants:

Both of your sons are seriously ill: your twenty-five year old son, who works in the fields with you, and your one-year old baby boy². You see the physician and receive a prescription for each of your sons, each amounting to 2,000 F CFA. You can only spend this amount on one son. Who would you spend it on and why?

All answered that they would prefer to spend the money on the 25-year-old and gave as reason that their adult sons were needed for field-work in order to feed the entire household. A typical answer of a farmer of the Bwaba ethnic group of Bourasso is:

You see. The adult son, you know, it's he who will pull me one day out of the hole. If I cure the child and leave the adult son, I will sooner or later run into problems. The child can't serve me in any respect directly now.

The under-use of health care by the young was mirrored by that of the very old (64 years and over). Here, the main argument the qualitative interviews revealed was that old people had reached a stage in the cycle of life where any forceful treatment does not make any sense.

²The costs of treatment required for both sons were assumed to be the same. In addition, the household was assumed to have resources available to cover only one treatment.

The following words of a wealthy 70-year-old village head caring for his 72-year-old cousin illustrates this concept:

Now in her case, if you do your fast today, you will pray to God, that he reserve her a good place, but to cure her illness..... it's useless. To say 'she does not have to die' - that's not true. Even with all the drugs, she's going to die. You see, that means man has a cycle of life: he is born, grows and dies. And when you have arrived there, it's no use to force things.

In contrast, when asked what he would do if one of his sons, who were between 16 and 37 years old, had a similar illness, the same village head responded very forcefully, interrupting the interviewer: 'refer him, refer him to the hospital immediately'.

R: Apart from this, for this old woman, they bring her food, but to pay for drugs, no.

I: You do not pay for drugs for old people?

R: For the old ones, it's no use wrecking your head to pay for drugs

In summary, the perception we gleaned from the qualitative interviews was twofold: the young were seen as unproductive and health care was viewed as an investment. Therefore health care for children had a lower priority for the household decisions than care for the currently productive adults. For the old, the rationale for the under-use of health care is one of perceived ineffectiveness. It is viewed as useless to interfere with disease at the last stage of life.

Discussion

Caldwell et al. (1983) made the point that household interview surveys are notoriously weak in capturing childhood morbidity. The authors reported that obviously sick children were not reported thus.

From our own work experience in the study area, we fully agree that many medical disorders are not viewed as diseases. In-depth ethnographic studies are needed to elucidate culture-bound illness concepts and their influence on perceiving as illness what health professionals consider as disease. However, in our study we looked at health-seeking behaviour and household spending behaviour given perception of illness. The perceived illness episode was the focus of our analysis. If indeed there was age bias in morbidity reporting, the age bias described in this study would have been even larger. We therefore conclude that any existing age bias in reporting does not invalidate our findings, but rather makes them a lower-bound estimate.

The reported age bias in health care use and expenditure is consistent with earlier reports from a neighbouring district that showed significant differences in health care use (Nougara et al. 1989, Sauerborn et al. 1989). Controlling for severity of illness, quality of care offered, price of care, distance of service, household size, age showed the second strongest association with health care use, second only to severity of illness. Although we did not repeat this multivariate analysis in this paper, we feel it is reasonable to expect a similar result.

Less clear-cut are our results as to why households behave as they do. Several explanations could be put forward to explain the household allocation of resources for child health care:

(1) Lack of information on the availability and effectiveness of health services for children; this explanation is unlikely in the setting of the study area where studies have reported the high esteem the population has for the effectiveness of modern care across all age groups.

(2) Cultural versus medical illness paradigm. Caldwell et al. (1983) argued that the religious aetiological illness model prompted a non-medical response, such as purging the

child's body and soul of evil spirits, rather than a visit to the nearest health centre. Our study did not produce any information to support such an explanation for the under-use of modern health care. We concede that more in-depth ethnographic research on age-specific illness and treatment concepts is needed to explore this potential explanation further. If traditional medicine were viewed as more appropriate for the treatment of children, we would expect to see more use of the traditional healer. In contrast, sick children are about half as likely to be presented to traditional healers as sick adults.

(3) Child fostering. Bledsoe, Ewbank and Isiugo-Abanihe (1988) argued that children fare worse in health care because of the high proportion of foster-children (40% in Sierra Leone) who receive less attention than the parent's own children. In comparison, the proportion of foster-children was 12.2 per cent in the Burkinian study population. In addition, in the study area, children are generally fostered by wealthier households and can therefore be expected to fare better than those who remained in their natal household. Not surprisingly, disaggregating our analysis by foster status did not yield any significant differences either in use of services or in the allocation of households' financial and time resources.

(4) Maternal employment: an argument put forward by Basu (1990) to explain the lower health care use for children in Tamil Nadu, where many mothers have formal employment far away from home. However, there is virtually no formal employment for women in the study area.

(5) Protecting household production. Of the five possible hypotheses examined here, our results are best compatible with the economic one: production maintenance. While this study does not provide the definitive answer, results point to the hypothesis, to be tested by further research, that the household's production maximization rationale determines its allocation of resources for health care to productive adults, away from children. We consider the following as a hypothesis to be tested by further research, rather than a confirmed conclusion, given the data presented.

Households living on the margin of subsistence with a severely sick member face a cruel trade-off. They can either use household resources to maximize health equitably among all members and thereby risk jeopardizing the household's economic viability or they can selectively protect the health of the productive members only in order to assure the household's capacity to produce. The latter option carries the risk of worsening the health status of those members who are not productive, such as children. Funneling household resources to adults is therefore a matter of economic survival and not of neglect of children.

Our findings suggest that maintaining its capacity to produce is the main objective of the household. From the household's perspective, priority is first given to health expenditures which support production and income maintenance. The greatest efforts in generating the financial resources for treatment were observed when productive adults were ill, prompted by the threat to household production. Conversely, illness in the economically unproductive household members (the very young and the old) rarely leads to major household resource allocation for health care.

Our conclusion of livelihood protection as the guiding principle for the intra-household allocation of resources is indirectly corroborated by our finding of lack of gender discrimination. Indeed, given the hypothesized rationale of household behaviour, it does not make sense for the household to discriminate along gender lines, since women are at least as productive³ as men, as our time allocation study suggests (see Table 4). Our conclusion is consonant with the lack of gender bias in intra-household food allocation reported by Deaton

³An indication of the economic valuation of women lies in the considerable bridewealth that the future husband has to pay.

(1993) for Ivory Coast and Haddad and Reardon (1993) for both rural and urban Burkina Faso.

DrŠze and Sen (1989) argue that gender differences in life expectancy point to gender discrimination. The fact that life expectancy for women in Burkina Faso exceeds that for men by two years (47 and 45 years respectively) corroborates our finding of lack of gender discrimination in health care.

Similar household preferences, based on perceived productivity, were reported by Behrman (1988) based on a study of intra-household food allocation in rural India. He showed that parental preferences had productivity-equity tradeoffs and that parents favoured older, that is more productive children in the allocation of food.

Similarly, famine research supports the conclusion that economic viability, not consumption, is the primary objective of the household in times of crisis: Corbett (1988,1989) and Chen (1991) showed that households gave high priority to maintaining their ability to produce. Consumption was reduced (food consumption was even reduced to starvation levels) well before any productive assets were sold. Households generally tried to mortgage productive assets, thus maintaining their ability to produce, before they had to sell them.

Pryer (1989) and Evans (1989) argued that maintaining the economic viability of the household is the prerequisite for maintaining the health of all household members, including the unproductive ones. Their case studies documented the effect of illness of the household's breadwinner on the entire household, especially on children.

While some minimal level of adult health is probably a necessary condition for child health, it is certainly not sufficient, as the extremely high mortality rates for children in Burkina Faso show. The use of effective health services is another condition essential for promoting child health. In this case, policy makers may not find full support for their priorities in household preferences. The household age bias against child care is in striking contrast with the current policy agenda. Equity of use of health care across age, sex, and income boundaries is a common goal in public health policy (Hammer and Berman 1995). Major donor agencies such as USAID and UNICEF focus on improving child health services. However, without a clear understanding of the household rationale underlying children's under-use of health services, some of these efforts may not produce the desired results. Our study suggests some strong age-disparities between need and demand for health care, as Figure 4 shows in a schematic way.

The implications of these findings for appropriate health policy strategies are not simple or obvious. International agencies have promoted child survival as a 'public' or 'merit' good, arguing for substantial public action to reduce childhood disease and mortality. This approach is based on an assumption of various types of market failures, including under-consumption due to the 'free rider' problem and information failures related to consumer 'ignorance'. The results presented here suggest that households in Burkina Faso are not ignorant of the potential for improving child health, but rather rationally choose to allocate scarce resources to productive adults. Is this strategy indeed rational? For example, does it succeed in maintaining overall household survival better than an alternative strategy, given the choices the households face? Should governments support child health services as a social investment, even if this is not a priority of households?

To the extent child health is valued as a public good in Burkina Faso, government could act to reduce the costs to households of effective child health interventions. This could be done through low prices and cross-subsidies from higher-priced adult health services. Sauerborn et al. (1994) showed that demand for child health care in rural Burkina was very price-elastic, while demand for adult health care was inelastic. Similar findings were reported from Ivory Coast by Gertler and van der Gaag (1990). Cross-subsidies from adult to child health services are equivalent to a small income transfer to poor households. However, it

should be noted that, if households are indeed rational, lower prices for adult health services might be a more effective transfer to promote household welfare.

Figure 4
Schematic presentation of the contrast between age-specific household demand for health care and (professionally defined) age-specific need.

Inverse relationship between need and demand for health care

Another way to reduce age-specific financial access barriers consists in health insurance, which covers children at no additional cost at the point of use (co-payments). It is encouraging that insurance in rural areas of Sub-Saharan Africa has recently attracted great interest (for a review see Shaw and Griffin 1995). More applied research is certainly welcome in this domain, especially with regard to the effect of insurance schemes on children's health care use.

Households' reluctance to devote scarce time to child health care is likely to remain a significant constraint, even if the money price of services is low. To address this constraint, mass outreach interventions may be needed. However, it is questionable whether any of these actions would be sufficient to overcome the household allocation bias unless household preferences themselves change. Given the poverty of these families, it is also unlikely that persuasion (such as social marketing) would be sufficient to change their preferences, although it could encourage better use of low-cost interventions. This latter approach might be important if households were willing to procure a few more effective services for their children, if they knew which services those were.

In summary, this study showed that households spent significantly less for the care of children than for the care of adults. Sick children are considerably less often presented to modern health services than adults. None of these differences were observed along gender

lines. The underlying household rationale is the protection of the household production which takes precedence over the health maximization for all of its members. This paper argues that better understanding of intra-household discrimination may be needed to design more effective policies. More research is welcome to corroborate our hypothesis that production maintenance is the guiding principle for the intra-household allocation of resources. The principle obviously transcends the health field and, if true, would also be applicable to resource allocation in other areas, such as nutrition or education.

As to gender discrimination, we agree with Haddad and Reardon (1993:274-275) that 'the burden of proof remains with those who claim that household resources are skewed away from girls in Sub-Saharan Africa'.

References

- Acharya, M. 1982. *Time Use Data and the Living Standards Measurement Study*. World Bank Working Paper no. 18. Washington DC: World Bank.
- Basu, A.M. 1990. Cultural influences on health care use: two regional groups in India. *Studies in Family Planning* 21,5:275-286.
- Behrman, J.R. Nutrition, health, birth order and seasonality: intra-household allocation among children in rural India. *Journal of Development Economics* 28:43-62.
- Bledsoe, C.H., D.C. Ewbank and U.C. Isiugo-Abanihe. 1988. The effect of child fostering on feeding practices and access to health services in rural Sierra Leone. *Social Science and Medicine* 27,6:627-636.
- Caldwell, J.C., P.H. Reddy and P. Caldwell. 1983. The social component of mortality decline: an investigation in South India employing alternative methodologies. *Population Studies* 37,2:185-206.
- Chen, L., E. Huq and S. D'Souza. 1981. Sex bias in the family allocation of health care in Bangladesh. *Population and Development Review* 7,1:55-70.
- Chen, M.A. 1991. *Coping with Seasonality and Drought*. Delhi: Sage Publications.
- Corbett, J.E.M. 1988. *Famine and Household Coping Strategies*. London School of Hygiene and Tropical Medicine.
- Corbett, J. 1989. Poverty and sickness: the high costs of ill health. *IDS Bulletin* 20:58-62.
- Das Gupta, M. 1987. Selective discrimination against female children in rural Punjab, India. *Population and Development Review* 13,1:77-100.
- Deaton, A. 1993. *The Allocation of Goods within the Household*. Living Standards Measurement Study Working Paper No. 39. Washington DC: World Bank.
- DrŠze, J. and A. Sen. 1989. *Hunger and Public Action*. Oxford: Clarendon Press.
- Evans, T. 1989. The impact of permanent disability on rural households: river blindness in Guinea. *IDS Bulletin* 20:41-48.
- Gertler, P. and J. Van Der Gaag. 1990. *The Willingness to Pay for Medical Care*. Baltimore: Johns Hopkins University Press.
- Haddad, L. and R. Kanbur. 1990. How serious is the neglect of intra-household inequality? *Economic Journal* 100:402.
- Haddad, L. and T. Reardon. 1993. Gender bias in the allocation of resources within the household in Burkina Faso: a disaggregated outlay equivalent analysis. *Journal of Development Studies* 29,2:260-276.

- Hammer, J.S. and P.A. Berman. 1995. Ends and Means in Public Health Policy in Developing Countries. In *Health Sector Reform in Developing Countries: Making Health Development Sustainable*, ed. P.A. Berman. Cambridge MA: Harvard School of Public Health.
- Maxwell, J.A. and B. Miller. 1994. Categorization and contextualization as components of qualitative data analysis. Unpublished paper.
- McSweeney, B. 1979. Collection and analysis of data on rural women's time use. *Studies in Family Planning* 10,11/12:379-382.
- Nougata, A., R. Sauerborn and H. Diesfeld. 1989. Assessment of MCH-services offered by professional and community health workers in the district of Solenzo, Burkina Faso. I. Utilization of MCH-services. *Journal of Tropical Pediatrics* 35,S:2-9.
- Pryer, J. 1989. When breadwinners fall ill: preliminary findings from a case study in Bangladesh. *IDS Bulletin* 20:49-58.
- Sauerborn, R. 1994. Household strategies to cope with the economic costs of illness: a community based study in Burkina Faso. Doctoral Dissertation, Harvard School of Public Health, Boston.
- Sauerborn, R. and M. Garenne. 1993. *Rapport préliminaire sur les résultats du Projet Recherche Action sur l'Impact des Services de Santé*. Ouagadougou: Ministère de Santé Publique.
- Sauerborn, R. and A. Nougata. 1993. Traditional medicine is practiced by mothers rather than by traditional healers — a study from Solenzo, Burkina Faso. *Curare* 15:97-100.
- Sauerborn, R., A. Nougata and H.J. Diesfeld. 1989. Low utilization of community health workers: results from a household interview survey in Burkina Faso. *Social Science and Medicine* 29:1163-1174.
- Sauerborn, R., A. Nougata, M. Hien and H.J. Diesfeld. 1996. Seasonal variations of the household costs of illness in Burkina Faso. *Social Science and Medicine* 43,3:281-290.
- Sauerborn, R., A. Nougata and E. Latimer. 1994. The elasticity of demand for health care in Burkina Faso. *Health Policy Planning* 9:185-192.
- Sen, A.K. 1984. Family and food: sex bias in poverty. In *Resources, Values, and Development*, ed. A.K. Sen. Cambridge MA: Harvard University Press.
- Shaw, R.P. and C.C. Griffin. 1995. *Financing Health Care in Sub-Saharan Africa through User Fees and Insurance*. Washington DC: World Bank.
- Singh, S., J.E. Gordon and J.B. Wyon. 1962. Medical care in fatal illness of a rural Punjab population: some social, biological and cultural factors and their ecological implications. *Indian Journal of Medical Research* 50,6:865-880.
- Svedberg, P. 1990. Undernutrition in Sub-Saharan Africa: is there a gender bias? *Journal of Development Studies* 26,3:469-486.
- White, B. 1983. Measuring time allocation, decision making and agrarian changes affecting rural women: examples from recent research in Indonesia. Paper presented at Methodology Workshop: Research on Rural Women, 12-14 March, 1982. University of Sussex.
- United Nations. 1983. *Manual X: Indirect Techniques for Demographic Estimation*. New York.
- World Bank. 1994. *World Development Report: Infrastructure for Development*. Washington DC.

Age bias in intra-household resource allocation for health care, Burkina Faso

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Age bias in intra-household resource allocation for health care, Burkina Faso

>=60

60-64

55-59

50-54

45-49

40-44

35-39

30-34

25-29

20-24

15-19

10-14

5-9

1-4

0-1

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arbitrary units