

# Reduction of catastrophic health care expenditures by a community-based health insurance scheme in Gujarat, India: current experiences and challenges

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**Objective** To assess the Self Employed Women's Association's Medical Insurance Fund in Gujarat in terms of insurance coverage according to income groups, protection of claimants from costs of hospitalization, time between discharge and reimbursement, and frequency of use.

**Methods** One thousand nine hundred and thirty claims submitted over six years were analysed.

**Findings** Two hundred and fifteen (11%) of 1927 claims were rejected. The mean household income of claimants was significantly lower than that of the general population. The percentage of households below the poverty line was similar for claimants and the general population. One thousand seven hundred and twelve (1712) claims were reimbursed: 805 (47%) fully and 907 (53%) at a mean reimbursement rate of 55.6%. Reimbursement more than halved the percentage of catastrophic hospitalizations (>10% of annual household income) and hospitalizations resulting in impoverishment. The average time between discharge and reimbursement was four months. The frequency of submission of claims was low (18.0/1000 members per year: 22–37% of the estimated frequency of hospitalization).

**Conclusions** The findings have implications for community-based health insurance schemes in India and elsewhere. Such schemes can protect poor households against the uncertain risk of medical expenses. They can be implemented in areas where institutional capacity is too weak to organize nationwide risk-pooling. Such schemes can cover poor people, including people and households below the poverty line. A trade off exists between maintaining the scheme's financial viability and protecting members against catastrophic expenditures. To facilitate reimbursement, administration, particularly processing of claims, should happen near claimants. Fine-tuning the design of a scheme is an ongoing process — a system of monitoring and evaluation is vital.

**Keywords** Health expenditures; Insurance, Health/utilization/trends; Insurance, Health, Reimbursement; Insurance, Hospitalization; Insurance claim review; Women, Working; Consumer participation; Poverty; India (*source: MeSH, NLM*).

**Mots clés** Dépenses de santé; Assurance-maladie/utilisation/orientations; Assurance hospitalisation; Remboursement assurance-maladie; Contrôle compagnie assurance; Femme professionnellement active; Participation consommateurs; Pauvreté; Inde (*source: MeSH, INSERM*).

**Palabras clave** Gastos en salud; Seguro de salud/utilización/tendencias; Seguro de hospitalización; Reembolso de seguro de salud; Revisión de utilización de seguros; Trabajo de mujeres; Participación comunitaria; Pobreza; India (*fuelle: DeCS, BIREME*).

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## Introduction

For over 20 years, calls have been made for communities in developing countries to plan, finance, organize and operate health care services. The Declaration of Alma-Ata implied that community participation was integral to the achievement of health for all, and it stated that “primary health care requires and promotes maximum community and individual self-reliance and participation ... making fullest use of local, national and other available resources” (1). The Bamako Initiative aimed to make primary health care universally accessible through community financing and management (2), but questions remain as to whether, how and how much poor people in poor countries can or should be expected to contribute towards health care.

The issue of primary health care and its financing matters most to poor people themselves. Material wealth, health and the ability to cope with adverse health events are intimately related. The World Bank defines poverty as “encompassing not only material deprivation but also low achievements in education and health ... [and] vulnerability and exposure to risk” (3). A person with a low income may be unable to afford preventive care — or curative care in the event of illness — and this may worsen their health. In the event of serious illness, the poor are particularly vulnerable to the financial burden of lost income and out-of-pocket medical expenses, as they have low levels of the assets (for example, access to savings and credit or land and belongings for sale/mortgage) necessary to cope. Disease or illness can force a person, and their household, into a vicious downward

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spiral in which poor health depletes assets and low levels of assets lead to worsening health and an inability to cope with future illness. In theory, health care provided by governments should cover poor people; in practice, it often does not. Ways to protect the poor from the costs of medical care are needed.

### Community-based health insurance

Community-based health insurance schemes allow many people's resources to be pooled to cover the costs of unpredictable health-related events. They protect individuals and households from the risk of catastrophic medical expenses in exchange for regular payments of premiums. Prepayment (even in the absence of pooling) can facilitate access to expensive medical care, because it spreads costs over time and prevents people having to pay at the time of treatment. By pooling resources, health insurance schemes can improve equity of and access to health care and can offer financial protection.

In risk-sharing schemes, the insurance premium is unrelated to the likelihood that the insured will fall ill and benefits are provided on the basis of need — hence, payments go to the people who are most ill. Because people with lower incomes and those who are less educated tend to be in poorer health than those with higher incomes and those who are more educated, the former stand to gain more from insurance schemes (4). In cross-subsidization schemes, premiums are indexed to the member's income, and access to health care for the poor is as good as (or better) than that for the wealthy. In such schemes, wealthy members subsidize health care costs for poorer members.

Policy-makers hope that community-based health insurance will contribute to WHO's recently proposed "final" health system's goals of better health, fair financing and responsiveness (5). Community-based health insurance allows pooling in settings where institutional capacity is too weak to organize nationwide risk-pooling, especially in low-income countries. A basic question is whether community-based health insurance can cover populations large enough to put the pooling functions — risk-pooling and cross-subsidization — to use.

Most evaluations of community-based health insurance schemes have focused on instrumental goals — scheme design and management, percentage coverage of target populations and levels of cost recovery (6, 7). Evaluations made on the basis of such indicators have generally found community-based health insurance to be unsuccessful. Bennett et al. (6) reviewed 83 health insurance schemes provided for the informal sector and found that "Many of the schemes examined had been poorly designed and had encountered a range of problems as a result". They concluded that "schemes are unlikely to be suitable for widespread 'self-financing' of health-care" and that "insurance should thus be seen as a supporting strategy rather than as an exclusive financing alternative".

Some studies found that community-based health insurance schemes increase the use of health care, while (or as a result of) reducing costs to the consumer. Schemes that cover hospital inpatient care have increased the use of health care in settings as diverse as the People's Republic of China (8), the Democratic Republic of the Congo (9), Ghana (10) and Kenya (11). In the Bwamanda district of the Congo, Criel & Kegels

found that rates of hospital use by members of a voluntary insurance scheme for hospital care were twice as high as those for the non-insured population (49 vs 24.9 per thousand per year) (9). The Nkoranza Community Financing Scheme in Ghana covers 100% of the costs of hospitalization (10). Members of this scheme consistently were more likely to be admitted to hospital (4.6–6.3% admitted per year) than non-members (1.5–2.6% per year).

### Self Employed Women's Association

The Self Employed Women's Association was started by Ela Bhatt in Ahmedabad in 1972. "It is an organization of poor, self-employed women workers. These are women who earn a living through their own labor or small businesses. They do not obtain regular salaried employment with welfare benefits like workers in the organized sector. They are the unprotected labor force of [India]" (12).

The organization has two main goals. The first goal is to organize women workers to achieve full employment, i.e. work security, income security, food security and social security. The second is to make women individually and collectively self-reliant, economically independent and capable of making their own decisions.

#### *Self Employed Women's Association's Integrated Social Security Scheme*

The Self Employed Women's Association's Integrated Social Security Scheme was set up in 1992. This scheme provides life insurance, medical insurance and asset insurance. In order to join the fund, women must be between 18 and 58 years of age. The social security scheme's annual premium is 72.5 rupees (US\$ 1.67), 30 rupees of which is earmarked for medical insurance. Women who pay this premium are covered to a maximum of 1200 rupees (US\$ 28) per year in case of hospitalization. Women can also become lifetime members of the social security scheme by making a fixed deposit of 700 rupees (US\$ 16) — interest on this deposit is used to pay the annual premium, and the deposit is returned to the woman when she turns 58.<sup>1</sup> Certain pre-existing diseases, such as chronic tuberculosis, certain cancers, diabetes, hypertension and piles, and diseases caused by addiction are not covered by the medical insurance fund.

### Provision of health care

The choice of health care provider is left to the discretion of the association's member, and members are eligible for reimbursement whether they use private-for-profit, private-non-profit or public facilities. The member must submit certain documents within three months of discharge from hospital:

- a doctor's certificate stating the reason for hospitalization and the dates of admission and discharge;
- doctors' prescriptions and bills for medicines purchased;
- reports of laboratory tests done during the hospital stay.

After the documents are submitted, an employee of the Self Employed Women's Association usually visits the member to verify the authenticity of the claim. All documentation is reviewed by a consultant physician, and a final decision on the

<sup>1</sup> The fixed deposit, which can be paid at any time of the year, must be paid in cash into the member's account in the Self Employed Women's Association's Bank, where it remains. The annual interest — ranging from 11 to 13% up to 1999 — is used to pay the annual premium (13). To date, the interest has compensated for inflation.

claim is made by an insurance panel. The fund member is told of the panel's decision and, when applicable, is paid by cheque.

The Self Employed Women's Association directly provides limited preventive and curative services through 95 health centres, which are open to members of the Self Employed Women's Association as well as non-members. In some cases, the health workers at these centres might refer women for higher levels of health care, and they may even accompany women to the nearest hospital. The centres do not function as an integrated referral network, however — they have no direct contact with the hospitals and are not intended to prevent women from unnecessarily seeking hospitalization.

### **Design and management**

The design and management of the medical insurance fund have evolved considerably since 1992. Initially, the fund was administered jointly by the Self Employed Women's Association and the United India Insurance Company. At that time, coverage included only allopathic, inpatient care (not including gynaecological illnesses). The maximum reimbursement was 1000 rupees (US\$ 23) per year. In 1994, the Self Employed Women's Association assumed complete control of the medical insurance component of the fund. In 1995, coverage was expanded to include treatment from traditional bonesetters, occupational diseases, obstetric and gynaecological problems and, in exceptional cases, homeopathic or traditional medical care (still to a maximum of 1000 rupees per year). In 1998, the maximum coverage was increased to 1200 rupees (US\$ 28) per year. In July 1998, administration of the medical insurance fund for Anand district was decentralized and moved from Ahmedabad to the district office in Anand.

In the fiscal year 1999–2000, the medical insurance fund had 23 214 members throughout the ten districts of Gujarat in which it operates. Since the fund's inception, the premiums paid by annual members plus the interest paid from the fixed deposits of lifetime members have always exceeded the payments of medical claims. Cost recovery (excluding administrative costs) varied from 119% to 309% (13) (data is not available for 1992–94).

### **Costs of administration**

It is very difficult to estimate the costs of administering the medical insurance fund. Many of the administrative functions are shared with the life and asset insurance components as well as with other activities of the Self Employed Women's Association. A recent study by the International Labour Office found that basic administration costs accounted for 10.2–22.9% of the Self Employed Women's Association's integrated social security scheme's expenses every year (13). Interest from a German development cooperation grant (100 million rupees given in 1993) is used to cover all administrative costs and to provide maternity benefit of 300 rupees.

### **Study aims**

To my knowledge, no study of community-based health insurance schemes has assessed their impact on the medical

indebtedness or impoverishment of members. This study aimed to assess the impact of the Self Employed Women's Association's Medical Insurance Fund in Gujarat, India, based on analysis of all claims filed after 1 July 1994. I assessed the fund in terms of:

1. insurance coverage according to the members' income groups
2. protection of claimants from expenses arising from hospitalization
3. lag time between discharge from hospital and reimbursement
4. frequency of use of the fund.

I had four hypotheses relating to these four measures. Firstly, I hypothesized that women benefiting from the fund would be poorer than the general population. This hypothesis was based on the Self Employed Women's Association's focus of organizing "poor, self-employed women workers ... the unprotected labor force of our country" (12).

Secondly, I hypothesized that a scheme that performed well would reduce significantly the percentage of hospitalizations for which the costs were catastrophic for the patient. After the example of Pradhan & Prescott (14), I defined costs as catastrophic when they consumed >10% of the person's annual household income.<sup>2</sup> In relation to this, I hypothesized that the fund would significantly reduce the percentage of hospitalizations that caused a patient's annual household income to fall below the poverty line. Thirdly, I assumed that reimbursement would be provided in 30 days or less — the goal of the Self Employed Women's Association (16).

Finally, I hypothesized that the frequency of submitted claims would be almost as high as, or higher than, the average rate of hospitalization among an age-matched, gender-matched and non-insured population. Underlying this hypothesis were the assumptions that most hospitalizations would be eligible for reimbursement, insured patients would submit claims for all eligible hospitalizations and insurance could, by removing financial barriers to inpatient care, result in higher rates of hospitalization for the insured.

In this study, I assumed that increases in the rate of use of health care by the poor in developing countries are beneficial, at least from the perspective of scheme members. The inefficient overuse of health services by the insured — termed moral hazard — and the escalating costs borne by insurers or health care providers have been a problem, however, particularly for schemes that cover hospital inpatient care (6).

### **Methods**

I entered details about all claims submitted to the Self Employed Women's Association into a Microsoft Access database. The details available were:

- self-reported, annual household income;
- total expenditures on hospitalization (for claims for which bills were available);
- date of discharge from hospital;
- date on which receipts and certificates were submitted;

<sup>2</sup> The World Health Organization estimates that "families that spend 50% or more of their nonfood expenditure on health are likely to be impoverished as a result" (5). For 1987–88, the Engel's ratios (the share of food in total expenditures) for Gujarat were 61% for rural households (ranging from 69% among the poorest quartile to 59% among the richest) and 60% for urban households (72% for the poorest quartile and 55% for the richest) (15). Nonfood expenditure accounted for 28–31% of total expenditures among the poorest quartile of households. Fifty percent of nonfood expenditure is roughly equivalent to 14–16% of total expenditures. If it assumed that self-reported income (reported in this study) is equal to self-reported expenditure, then the cut-off value for "catastrophic" used by the WHO is comparable, although slightly higher (more conservative), than my cut-off value of 10% of annual household income.

- date of the insurance panel's decision;
- whether the claimant was reimbursed;
- when and by how much the claimant was reimbursed.

I also used other sources to provide data for the analyses. The *Times of India* was the source of the poverty line in rupees per capita per month (17). The Self Employed Women's Association's 1999 annual report provided the numbers of insured per annum (12). Several household surveys were used to determine the frequency of hospitalization among age-matched women (18–20). The *World development report 2000–2001* (3) and the *Socio-economic review 1999–2000: Gujarat State* (21) were sources of gross domestic product per capita.

I included claims in the analysis only if the date that the patient was admitted to hospital fell between 1 July 1994 and 30 June 2000. Included claims were grouped by year, according to the date the claimant was admitted to hospital. The Self Employed Women's Association's financial year is 1 July to 30 June.

### Statistical analyses

Statistical analyses were carried out in Stata. In order to compare monetary amounts for different years — for example, data on income and hospital expenditures — I standardized values to 1999–2000 Indian rupees. I used gross domestic product deflators for India from the International Monetary Fund in these calculations (22). Deflators were not available for the calendar years 1998–2001, so I estimated them by extrapolating from the data for the preceding 11 years (1987–97) and assuming a linear increase. Deflators that correspond to the Self Employed Women's Association's financial year were estimated by taking the average of the deflators for the two calendar years — for example, the deflator for gross domestic product for 1994–95 was the average of the deflators for the calendar years 1994 and 1995. Monetary amounts for the year 1999–2000 were also expressed in US\$ using the exchange rate at the end of the 1999 calendar year — 43.49 rupees to US\$ 1 (22).

India's official measure of poverty is an index of head count based on the food–energy method. The poverty line is the monthly expenditure per capita in 1973–74 all-India prices and is 49 rupees in rural areas and 57 rupees in urban areas — people with less money to spend than these values are considered poor (23). The values correspond to a total household expenditure estimated as enough to provide 2400 calories daily in rural areas and 2100 calories daily in urban areas, plus some basic non-food items. The poverty line in 1999–2000 was an income of 254 rupees per person per month's income (17). In order to compare self-reported household income with the poverty line, I assumed (conservatively) a household size of 4.5; this compares with values of 4.63–5.88 found by Gumber & Kulkarni (18) and 5.4 found by Ranson (19). I considered a household to be below the poverty line if its reported yearly income was below 13 716 rupees (254 rupees per person per month × 12 months × 4.5 household members).

## Results

Between 1 July 1994 and 30 June 2000, 1930 claims for hospitalization were made. The mean age of 1927 claimants was 41 years (median = 40 years). The leading causes of hospitalization for 1914 claims were accidents and injuries (14%), malaria (10%), acute gastroenteritis (10%) and hysterectomy (9%). The mean duration of hospitalization for 1929 cases was 6.1 days (median = 4 days). Private-for-profit, government and private-non-profit hospitals cared for patients in 63.9%, 28.6% and 7.5% of claims, respectively.

### Income of claimants

On the basis of self-reported annual household incomes, the women who made claims were much poorer than the general population. The mean self-reported annual household income for 1838 claimants (expressed in 1999–2000 rupees) was 25 984 rupees (US\$ 597; 95% confidence interval (CI) = 24 604–27 365 rupees; median = 19 812 rupees). This value is slightly lower than the mean household income for households that included members of the Self Employed Women's Association found by Gumber and Kulkarni — 31 182 rupees among 121 rural households and 37 715 rupees among 236 urban households (measures of variance not available) (18). The mean value changed relatively little when outlying values were removed (Table 1).

The mean income of claimants was significantly less than the 1999 per capita income for all India of US\$ 450 (equivalent to a household income of 88 067 rupees, one-sample *t*-statistic = –88.2, *P* < 0.001 (3)) and the 1998–99 per capita income for Gujarat of 18 792 rupees (equivalent to a household income of 93 005 1999–2000 rupees, one-sample *t*-statistic = –95.2, *P* < 0.001 (21)).<sup>3</sup> Overall, 502 (27%) of 1838 claimants for whom income information was available fell below the poverty line. This value is within the wide range of estimates of the percentage of Gujarati households that are below the poverty line.<sup>4</sup>

### Reimbursement of claims

Claims were rejected in 215 (11%) of 1927 cases.<sup>5</sup> On average, the fund reimbursed claimants for a high percentage of the total cost of hospitalization (Table 2). The median spent on the 1712 hospitalizations for which costs were reimbursed was 1387 rupees (US\$ 32; mean = 2037 rupees), and the median amount reimbursed was 1200 rupees (US\$ 28; mean = 1016 rupees).

Of the claims that were reimbursed, 807 (47%) were reimbursed in full; the mean rate of reimbursement among the remaining 905 claims was 55.6% of the amount claimed (median 57.3%). The mean rate of reimbursement for all 1712 reimbursed claims was 76.5% (median 92.6%).<sup>6</sup>

### Protection from expenses caused by hospitalization

The fund significantly reduced the financial burden of hospital expenditure for claimants; however, even after reimbursement,

<sup>3</sup> As with the calculation of poverty line, in order to compare household income with published figures of per capita income, I assumed (conservatively) a household size of 4.5.

<sup>4</sup> Estimates of the percentage of Gujarati households below the poverty line vary from 14.07% (Gujarat Department of Rural Development) to 33.48% (State Food and Civil Supplies Department) (17). Figures used by the World Bank vary considerably — for example, the estimates for 1993–94 range from 22.16% for rural areas and 28.28% for urban areas (24) to 35.39% for rural areas and 30.66% urban areas (23).

<sup>5</sup> Of the 215 rejected claims, reasons for rejection included pre-existing disease (48%), incomplete documentation (15%) and fraudulent claim (10%).

<sup>6</sup> Mean rate of reimbursement = [sum (amount reimbursed per claim/total expenditure per claim × 100)]/number of reimbursed claims.

Table 1. Self-reported, annual household income of claimants

Claimants	n	Annual household income	
		Mean (95% CI)	Median
All	1838	25 984 (24 604–27 365) <sup>a</sup>	19 797
Excluding outliers			
Two outliers >600 000 rupees	1836	25 331 (24 289–26 373) <sup>a</sup>	19 797
Six outliers >200 000 rupees	1832	24 723 (23 871–25 575)	19 797

<sup>a</sup> Figures in parentheses are 95% confidence intervals.

the costs paid by some claimants were still catastrophic. The mean spent on hospitalization (12.2% of annual household income) was significantly higher than the amount paid by 1632 claimants after they had received reimbursement (5.8% of income; paired *t*-statistic = 37.9, *P* < 0.001) (Table 2). For 581 (35.6%) claims, the total spent on hospitalization would have been catastrophic for the claimant, while expenditures by patients after reimbursement were catastrophic for 246 (15.1%) of 1632 claims (paired *t*-statistic = 20.5, *P* < 0.001) (Table 2).

The burden of costs associated with hospitalization was greater for poorer claimants than for less poor claimants, and reimbursement by the fund was more effective in preventing catastrophic hospital expenditures among the poorer quintiles (Table 3). The extent to which the fund reduced catastrophic expenditures was significantly associated with the claimant's income — reimbursement of claims by the fund had the greatest impact among the poorest quintiles ( $\chi^2 = 281.3$ , *P* < 0.001).

An indicator of dispersion — percentage of the poor for whom expenditures were catastrophic/percentage of the non-poor in the fifth income quintile for whom expenditures were catastrophic — was higher before reimbursement (2.03) than after reimbursement (1.64). After reimbursement, claimants who used government hospitals incurred less financial burden than claimants who used private-for-profit hospitals — post-reimbursement expenditures were equivalent to 1.4% vs 8.0% of the patient's annual household income, and the percentage of claims catastrophic to household finances was 3.7% vs 21.2% (data not shown).

Even when claimants were not hospitalized, 462 (28.3%) of 1632 reimbursed claimants who provided data on income were below the poverty line according to their income. Expenditures on hospitalization meant an additional 107 (6.6%) households fell below the poverty line. Reimbursement by the Self Employed Women's Association prevented 56 (3.4%) of 1632 claimants who were reimbursed from falling below the poverty line (paired *t*-statistic = 7.6, *P* < 0.001), i.e. the fund significantly reduced the percentage of hospitalizations that would have resulted in impoverishment (by 52%).

### Lag time between discharge from hospital and reimbursement

On average, claimants received reimbursement almost four months after hospital discharge; the lag time appeared to be

Table 2. Cost of hospitalizations and amount reimbursed

Variable	n	Mean cost (95% CI; median)
Total cost of all hospitalizations (rupees)	1930	2046 (1945–2148; 1409) <sup>a</sup>
Total cost of reimbursed hospitalizations (rupees)	1712	2037 (1930–2143; 1387)
% of annual household income	1632 <sup>b</sup>	12.2 (11.1–13.2; 7)
% of claimants for whom total cost of hospitalization is catastrophic	1632 <sup>b</sup>	35.6 (33.3–37.9; –)
Total amount reimbursed (rupees)	1712	1016 (998–1034; 1200)
Amount reimbursed as % of total hospital costs	1712	76.5 (75.2–77.9; 93)
Amount paid by claimants after reimbursement (rupees)	1712	1020 (922–1119; 100)
% of annual household income	1632 <sup>b</sup>	5.8 (4.9–6.6; 0.3)
% of claimants for whom cost of hospitalization after reimbursement are catastrophic	1632 <sup>b</sup>	15.1 (13.3–16.8; –)

<sup>a</sup> See footnote a, Table 1.

<sup>b</sup> For *n* = 80, income data were not available.

longer for claimants who lived in rural areas than for those in urban areas (Table 4). The lag time between discharge and reimbursement was 119 (median = 99) days for 1102 claimants. The lag time was significantly longer for 334 claimants in Anand district, where most members live in rural areas, than for 740 claimants in Ahmedabad, where most members live in the city (mean = 161 vs 100 days; median 140 vs 87 days; *t*-statistic = –13.3, *P* < 0.001). Similarly, the lag time was significantly longer for those who worked as farmers or agricultural labourers than for those working in non-agricultural sectors (*t*-statistic = –7.9, *P* < 0.001) (Table 4).

In the two most recent fiscal years of the study, the lag time was significantly lower than in the first four fiscal years (Table 4). The mean lag time for 384 claimants in the fiscal years 1994–95 through 1997–98 was 159 days (median = 140 days) and for 718 claimants in the fiscal years 1998–99 and 1999–2000 was 98 days (median = 87 days; *t*-statistic = 14.0, *P* < 0.001). By the most recent two fiscal years of the study, differences in lag time by district (*t*-statistic = –0.69, *P* = 0.492) and by occupation (*t*-statistic = 0.11, *P* = 0.905) had stopped being statistically significant and had virtually disappeared. For the last two fiscal years, the 98 days between discharge and reimbursement could be roughly broken down into 55 days from discharge to submission of the claim, 26 days from submission to the date of the panel's decision, and 18 days between the panel's decision and receipt of payment by the claimant.

### Frequency of use of the fund (as a proxy for frequency of hospitalization)

The overall frequency of submission of claims was 18.0 per 1000 members per year (*n* = 1930, 95% CI = 17.2–18.8). Fig. 1

<sup>7</sup> The Ranson study (19) included members of the Self Employed Women's Association, aged 18 to 58 years, in Anand district of Gujarat. The Gumber study (18) included females of all ages living in households where at least one woman was a member of the Self Employed Women's Association. The Sundar study (20) included females of all ages in a sample of the general population. These studies included hospitalizations due to all causes, including chronic and other causes that might be ineligible for reimbursement under the Self Employed Women's Association insurance scheme.

Table 3. The financial burden of total hospital costs and costs borne by the claimant after reimbursement (reimbursed claimants only)

Variable	Income quintiles <sup>a</sup>					Total	Dispersion <sup>b</sup>
	1	2	3	4	5		
Total hospital costs ( <i>n</i> = 1632)							
% of household income	25.5	12.7	8.9	7.3	4.8	12.2	–
% for whom total cost is catastrophic	72.4	45.7	23.6	19.5	12.1	35.6	2.03
Amount borne by claimants, after reimbursement ( <i>n</i> = 1632)							
% of household income	11.7	5.9	4.0	3.8	2.8	5.8	–
% for whom total cost, after reimbursement, is catastrophic	24.8	16.1	12.7	11.9	8.7	15.1	1.64
Change in % of catastrophic care after reimbursement	47.6	29.6	10.9	7.5	3.4	20.5	–

<sup>a</sup> Pearson  $\chi^2 = 281.3$ ,  $P < 0.001$ .

<sup>b</sup> Percentage of the poor for whom total expenditure was catastrophic/percentage of the not-so-poor (fifth quintile) for whom total expenditure was catastrophic.

compares the frequency of submission of claims with the frequency of hospitalization for women in several household surveys in the state of Gujarat.<sup>7</sup> The frequency of submission of claims to the Self Employed Women's Association, as a percentage of the frequency of hospitalization found in the household surveys, ranged from 22% (frequency of hospitalization (urban and rural combined) 80.6/1000 population per year, 95% CI = 46.7–114.6) to 37% in rural areas (frequency of hospitalization = 48.0/1000 population/year, 95% CI = 25.0–71.0) (18, 19).

## Discussion

The Self Employed Women's Association's Medical Insurance Fund successfully included the poor. The mean household income of claimants was significantly lower than that of the general population, and the percentage of households living below the poverty line was similar for claimants and the general population.

The fund undoubtedly provided some financial protection to claimants, as it more than halved the percentage of catastrophic hospitalizations and hospitalizations that would have resulted in impoverishment. Even after reimbursement, however, expenditures were still a threat to the financial well-being of some households: 15% of claimants still faced expenditures equivalent to >10% of their annual household income. Reimbursement by the fund was more effective in preventing catastrophic hospital expenditures among the poorer quintiles.

Even when the fund covered enough of the costs associated with hospitalization to prevent catastrophic expenditure, the time between discharge and reimbursement was quite long — four months across the whole study and just over three months in the last two years of the study. The frequency of submission of claims was very low compared with the expected frequency of hospitalization in this population.

### Study limitations

Some data included in the insurance claims may not have been reliable. In particular, data on self-reported household income and costs associated with hospitalization were probably inaccurate due to various reasons. The claimants may have misreported their household income if they were unaware of the true amount, they did not understand the question, the question was asked differently at different households or they did not trust the interviewer.

Costs associated with hospitalization, even when evidenced by bills and receipts, also were probably inaccurate for a number of reasons. Firstly, the expenses reported in the claims did not include indirect costs associated with hospitalization, such as costs of transportation, bribes and gifts supplied to health care providers, and food provided to visitors. Furthermore, the receipts may not have accurately reflected all costs related to hospitalization — when claimants know that the maximum coverage under the insurance fund is 1200 rupees, they are motivated to collect receipts up to, but not exceeding, this amount.

### Targeting the poor

The fund's success at including the poor reflects the Self Employed Women's Association's commitment to target self-employed, poor women. It probably is also due to the fact that it charges a flat-rate premium that is fairly low — currently 72.5 rupees (or 0.4% of median annual household income among claimants in this study). Studies of community-based health insurance schemes in Burundi, Ghana, and Mexico have found that the cost of membership is an important determinant of participation (6). By targeting the poor — and thus to some degree excluding the wealthy — the fund may limit the extent to which redistribution from people with high incomes to those with low incomes and from the healthy to the ill occurs. The Self Employed Women's Association may also foster adverse selection, by enrolling women who are at higher risk of poor health than the age-matched and sex-matched general population.

### Balancing service to the poor with financial viability

The fund faces a challenging trade off. On one hand, it is committed to serving the poor, which translates into low premiums and a target population for which the frequency of illness, and thus hospitalization, may be relatively high. On the other hand, the fund's administrators expect it to remain financially viable. To date, this trade off has not been a problem for the fund, largely because the low rates at which the fund is used (along with the small external grant from the German Development Cooperation) have meant consistently high rates of cost recovery.

A community-based health scheme that aims to strictly target the poor could improve equity and financial viability by seeking subsidies from government or donor agencies. Subsidies may, however, not be sufficiently reliable or sustainable. Alternatively, a socially oriented community-based

Table 4. Lag time from discharge to reimbursement

Analysis group	n	Mean lag time (95% CI; median) (days)
<b>For fiscal years between 1994 and 2000</b>		
Overall	1102	119 (115–124; 99) <sup>a</sup>
By district		
Ahmedabad	740	100 (96–104; 87)
Anand	334	161 (151–171; 140)
By occupation		
Farmer or farm labourer	387	143 (134–152; 124)
Other	710	107 (102–111; 90)
By fiscal year		
1994–98	384	159 (150–169; 140)
1998–2000	718	98 (95–102; 87)
<b>For fiscal years between 1998 and 2000</b>		
By district		
Ahmedabad	550	97 (92–101; 85)
Anand	146	100 (93–107; 93)
By occupation		
Farmer or farm labourer	202	98 (92–103; 88)
Other	513	98 (94–103; 87)

<sup>a</sup> See footnote a, Table 1.

health scheme could seek to broaden membership to include wealthier populations, but would ensure equity by indexing premiums to income and enabling equal (or better) access to care among the poor. For voluntary community-based health insurance schemes, this would require a high degree of social solidarity among members.

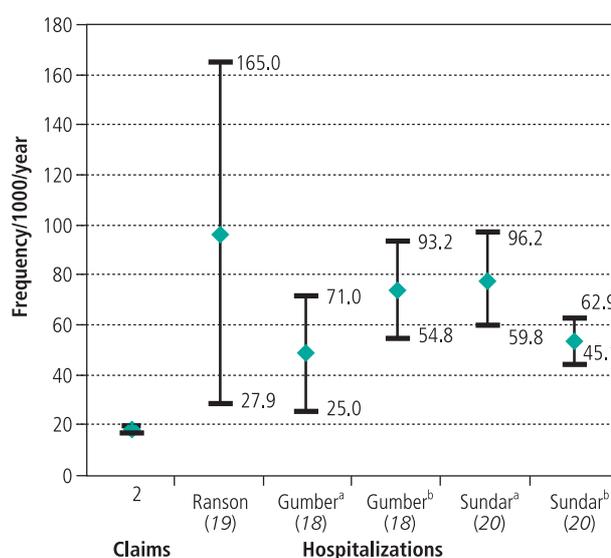
### Catastrophic hospital reimbursement

Even after claimants received reimbursement, costs relating to hospitalization were still catastrophic for some members. Some women may have paid the uncovered balance out of their savings, many undoubtedly had to borrow, sell capital, work more or forego spending.

Administrators of the scheme want to maintain a ceiling on reimbursements to prevent adverse selection and protect the scheme from large claims. Maintaining this cap on reimbursements may seem to go against the principles of socially oriented insurance, as it limits the degree of risk-pooling and financial protection available to members. However, given that the total premiums collected under the fund remain relatively small (relative to the cost of long, expensive hospital stays) and that the fund is not reinsured by any higher level insurer, the cap has been maintained in order to protect the fund's financial viability.

In future years, administrators plan to introduce new packages that would provide a higher level of coverage for a higher premium. For example, they have designed a package

Fig. 1. Frequency (95% confidence interval) of claims submitted to the Self Employed Women's Association and hospitalizations in Gujarati women (various sources)



<sup>a</sup> Rural areas.

<sup>b</sup> Urban areas.

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(to be offered alongside the existing package) that would cover hospitalization to 9000 rupees for an annual premium of 237 rupees; this compares with the current ceiling of 1200 rupees for a premium of 30 rupees (15). The new package might attract the economically better-off members of the Self Employed Women's Association and exclude poorer members. This could have negative impacts on equity if it creates two separate pools, because it would limit the amount of risk-pooling and cross-subsidization.

### Equitable hospitalization

It is impossible to know whether financing of hospitalization under the fund was equitable. Although the poorest claimants did seem to benefit most in terms of prevention of catastrophic expenditures, it is possible that members of the fund who were even poorer were not using hospital care or submitting claims. To determine whether or not the fund was equitable would require information on the household income and hospital expenditures of all members, rather than claimants alone.

### Lag time between discharge and reimbursement

The lag time between discharge and reimbursement was much higher than the Self Employed Women's Association's stated goal of 30 days, and it was certainly too long for women who had to borrow at high rates of interest to pay for their hospitalization. Decentralization of the claims process for Anand district to the Anand office coincided with a fall in lag time seen after 1998.

At the time of writing, more than half of the lag time (55 of 98 days) occurs between discharge from hospital and submission of the claim to the association. This may be because of problems encountered in collecting receipts and certificates or difficulties in presenting the claim to the closest association office — for example, due to lack of time or money to travel, restrictions on where the claimant may travel independently or

poor health. Future research should investigate why women wait so long before submitting their claims. Mechanisms that could be put in place to prevent delays in submission of claims (and to encourage submission of claims) include:

1. providing women with further education about the benefits of the fund and the process of claim submission;
2. training staff of the association who work in villages to accept insurance claims, so that members would not have to travel to offices in Anand or Ahmedabad to submit their claims;
3. establishing a programme by which members could notify the association that they are being admitted to hospital, so that a representative of the association could collect the appropriate paperwork at the time of discharge;
4. establishing more formal links with certain hospitals, so that the hospitals could submit receipts and certificate directly to the association.

### Submission rates

The relatively low rate of submission of claims suggests that:

- there were low rates of hospitalization (perhaps due to high anticipated costs);
- excluded conditions were the reason for a high percentage of all hospitalizations;
- members submitted claims for only a fraction of all hospitalizations.

The last reason would not be surprising: members may believe that rates of reimbursement are low (because the fund does not cover transportation, bribes, etc.) and the costs of submitting a claim — for example, transportation to the association's office, costs of missed work and bribes paid to doctors for hospital certificates — are quite high. A study should investigate the causes of all hospitalizations among fund members. If excluded conditions do comprise a high percentage, the scheme's administrators should consider including some of these in the benefits package. The high rates at which costs are recovered by the fund suggest that there is room to reduce the number of exclusions. Operational research should also investigate the frequency with which and the reasons why women hospitalized for a condition covered by the fund do not submit a claim.

### Conclusions

This study is one of few that have investigated the impact of a community-based health insurance scheme on use of health care and the financial burden of medical expenses. Its findings have important implications for policy concerning such schemes in India and elsewhere.

In India, as in many other developing countries, spending related to hospitalization is often catastrophic for household finances. The study shows that community-based health insurance schemes can effectively protect poor households from the uncertain risk of medical expenses, and they can

be implemented in areas where institutional capacity is too weak to organize mandatory, nationwide risk-pooling.

The study identified various aspects of scheme design and management that can be tailored (depending on the priorities of scheme administrators) to achieve such goals as risk-sharing, cross-subsidization, financial protection of households and scheme financial viability.

Firstly, this study suggests that community-based health insurance schemes can include poor people, including people and households below the poverty line. Factors that may facilitate inclusion of the poor include an affordable premium, external assistance and nesting the scheme within a larger organization that addresses other needs of the poor (for example, providing access to credit, education and bargaining power in the workplace).

Secondly, the financial risk borne by a scheme can be limited by placing a cap on the benefits provided. However, this also limits the extent of risk-pooling and cross-subsidization provided by the scheme. There will inevitably be cases where hospital expenditures far exceed this cap, with dire financial consequences for the insured.

Thirdly, in order to relieve the financial burden of expenditures on households, reimbursement under a scheme should be fast and easy. This needs administration of the scheme, particularly processing of claims, to happen as close to claimants as possible.

Fourthly, to fine-tune the design of a scheme needs information on who is enrolled and excluded, rates and causes of hospitalization, expenditure on hospitalization, and barriers that prevent enrolment in the scheme and use of the scheme by the insured. A system for monitoring and evaluating the scheme is vital. However, every change that administrators make to the fund — whether an increase in breadth or amount of the benefits package or interventions to improve rates and timeliness of insurance claim submission — will have to be weighed against impact on the fund's affordability and ability to recover costs. ■

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### Résumé

#### Réduction des frais de santé catastrophiques grâce à un système communautaire d'assurance-maladie dans le Gujarat (Inde) : résultats et enjeux

**Objectif** Evaluer un système communautaire d'assurance-maladie (Self Employed Women's Association's Medical Insurance Fund) du Gujarat d'après les critères suivants : couverture d'assurance selon la catégorie de revenus, protection des

requérants contre les frais d'hospitalisation, délai entre la sortie de l'hôpital et le remboursement, et fréquence d'utilisation.

**Méthodes** Au total, 1930 demandes de remboursement présentées sur 6 ans ont été analysées.

**Résultats** Sur 1927 demandes, 215 (11 %) ont été rejetées. Le revenu moyen par ménage était significativement plus faible chez les requérants que dans la population générale, mais le pourcentage de ménages se situant au-dessous du seuil de pauvreté était identique. Parmi les demandes examinées, 1712 ont donné lieu à un remboursement : 805 (47 %) ont été remboursées intégralement et 907 (53 %) à un taux moyen de 55,6 %. Grâce au remboursement, le pourcentage d'hospitalisations catastrophiques (dépassant 10 % du revenu annuel du ménage) et d'hospitalisations entraînant l'appauvrissement du ménage a diminué de plus de moitié. Le délai moyen entre la sortie de l'hôpital et le remboursement était de 4 mois. La fréquence des demandes était faible (18,0/1000 membres par an, soit 22-37 % de la fréquence estimée des hospitalisations).

**Conclusion** Les résultats peuvent intéresser les systèmes communautaires d'assurance-maladie en Inde et ailleurs. Ces systèmes peuvent protéger les ménages pauvres contre les aléas des dépenses médicales. Ils peuvent être mis en œuvre dans des régions où les systèmes officiels sont insuffisants pour organiser la répartition des risques à l'échelle nationale. Ils peuvent intégrer les pauvres, y compris les individus et les ménages qui se situent au-dessous du seuil de pauvreté. Il existe un nécessaire compromis entre le maintien de la viabilité financière du système et la protection de ses membres contre les frais catastrophiques. Pour faciliter le remboursement, l'administration du système, et en particulier le traitement des demandes de remboursement, doit être géographiquement proche des requérants. Le système doit être ajusté en permanence ; il est donc vital de disposer d'un système de surveillance et d'évaluation.

## Resumen

### Reducción de los gastos médicos catastróficos mediante un plan de seguro de enfermedad comunitario en Gujarat (India): resultados y retos

**Objetivo** Evaluar el Fondo de Seguro Médico de la Asociación de Mujeres Autoempleadas de Gujarat en lo que respecta a la cobertura según los grupos de ingresos, la protección de los reclamantes frente a los gastos de hospitalización, el tiempo transcurrido entre el alta y el reembolso, y la frecuencia de uso.

**Métodos** Se analizaron 1930 reclamaciones presentadas a lo largo de seis años.

**Resultados** Fueron rechazadas 215 (11%) de las 1927 reclamaciones consideradas. Los ingresos familiares medios de los reclamantes eran significativamente inferiores a los de la población general. El porcentaje de hogares situados por debajo del umbral de pobreza era similar para los reclamantes y para la población general. En total se respondió favorablemente a 1712 reclamaciones: en 805 casos (47%) se reembolsó la totalidad de lo solicitado, y en los 907 casos restantes (53%) la tasa media de reembolso fue del 55,6%. Los reembolsos redujeron en más de la mitad el porcentaje de hospitalizaciones catastróficas (>10% de los ingresos familiares anuales) y de hospitalizaciones con resultado de empobrecimiento. El tiempo medio transcurrido entre

el alta y el reembolso fue de cuatro meses. La frecuencia de presentación de reclamaciones fue baja (18,0/1000 miembros al año: 22%–37% de la frecuencia estimada de hospitalización).

**Conclusión** Los resultados obtenidos revisten interés para los planes de seguro médico de base comunitaria que funcionan en la India y otros lugares. Dichos planes permiten proteger a los hogares pobres frente al riesgo de gastos médicos, y pueden implantarse en las zonas donde la capacidad institucional es demasiado débil para poder organizar sistemas de mancomunación del riesgo de ámbito nacional. Los planes pueden abarcar a la población pobre, en particular a las personas y los hogares que están por debajo del umbral de pobreza. Existe un compromiso entre la viabilidad financiera del plan y la protección de los miembros contra gastos catastróficos. A fin de facilitar los reembolsos, conviene que el trabajo administrativo, y en particular la tramitación de las reclamaciones, se lleve a cabo cerca de los reclamantes. El perfeccionamiento del plan es un proceso continuo, de ahí la importancia decisiva de un sistema de vigilancia y evaluación.

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