Behind the technical approach to slum improvement

by Meera Bapat and Nigel Crook

While the provision of safe water supply and latrines are very important to slum upgrading schemes, this is not the whole solution. The authors' work in Pune found that the improvement in health was dependent on other things which require additional land. The authors argue that politics and power are as important to health improvement as taps and toilets.

THE CITY OF Pune in the state of Maharashtra in western India has enjoyed a certain degree of prosperity over the last 20 years because of industrial growth in the locality, which has become something of a counter-magnet to Bombay. The result of this industrial growth has been population growth (from both immigration and natural increase), which has fast outpaced the supply of housing and basic services at prices the lower classes can afford. In 1969 12 per cent of the city's one million or so inhabitants were forced to live in shanty settlements; by 1980 this proportion had jumped to 30 per cent.

We made a study of seven environmentally distinct shanty settlements in the city (following the monsoon in 1980). Through data obtained by recall at interview, sickness from all ailments was calculated in terms of a 15-day prevalence rate. This was then related to, firstly, socio-economic, and secondly, micro-environmental indicators at the household level.[1] The environmental indicators proved to be the more powerful of the two in explaining differences in morbidity risks. After taking into account household income or occupational structure or female literacy (none of which was independently significant), a measurement of ventilation and dampness characterizing the shanty always proved to be a significant predictor of health.

Relationships between water and health

In this study we observed very different levels of provision of sanitary facilities, and very different degrees of overall environmental cleanliness at the level of the whole settlement. For instance, the best-provided slum, with a population of around 1,500, had 120 latrines and 90 water taps. The two worst-provided slums, with populations of 4,000 and 5,000, had no latrines and only 10 water taps. We tested the strength of the statistical relationship between the per-capita provision of latrines or water taps and the prevalence of sickness among children (aged one to five) in the settlement; the relationship was a moderate one, and roughly the same for each facility taken separately (see Table 1). The relationship was much weaker if we took prevalence of sickness among the total population of all ages as the measure, or if we took infants alone. It was also weak if we related it to the prevalence of diarrhoeal disease in the population.

A slum settlement with latrines (the white blocks), but otherwise environmentally undesirable.

Importance of the wider environment

We feel, however, that such a simple-minded exercise in statistical correlation is likely to be misleading. As has been documented in previous issues of *Waterlines*, cleanliness in water handling is as important as the actual provision of the facility. Similarly, adequate rubbish disposal and the clearing of blocked drains will reduce the breeding grounds of bacteria-carrying insects. Spaciousness and ventilation should discourage further the breeding of disease vectors and, by minimizing damp living conditions, raise the resistance of the human host. It is difficult, and probably not very useful, to try to disentangle separate health effects of the individual components in environmental quality.

As an experiment, therefore, we created an index of environmental quality and related that to morbidity rates. Our index consisted of eight distinct components:

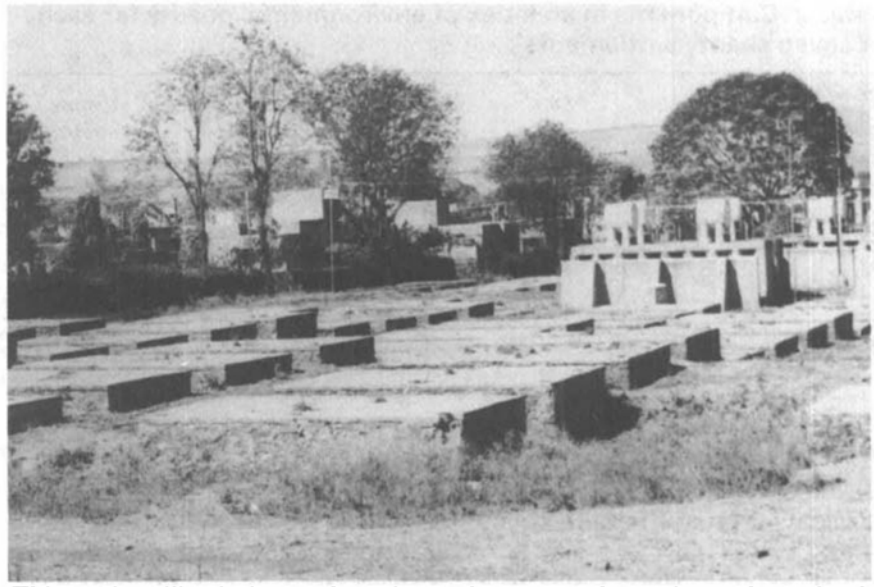
- Drinking-water facilities: based on whether or not the chief source was mains water.
- Latrines: based on the number of latrines per head.
- Lack of faecal coliforms in stored water samples: collected from a sample of households.
- Lack of faecal coliforms in food samples: similarly collected.
- Adequate garbage removal.

- Spaciousness: based on population per acre.
- Airiness of location: locations next to open land were contrasted with locations on a hillside.

Each component was given a value of 0, 0.5, or 1 (for bad, moderate and good, respectively), and the summation of these values made the environmental index presented in Table 2.

From Table 1 it can be seen that the correlation between morbidity and the environmental index is higher than it was between morbidity and the provision of taps or latrines. This is the more striking as taps and latrines are only two of the eight components in the index. (Actually the logarithm of the index gave the strongest relationship with morbidity levels, implying that marginal improvements are more important at low than at high levels of environmental quality.)

With an analysis based on as few as seven localities it is undesirable to attach too much importance to quantitative predictions. But to give an idea of the general order of magnitudes involved, we can predict (from a linear model) that if we were able to raise the general environmental level of the worst slum in our seven to that of the best, the sickness prevalence rate in the population would be reduced by 18 per cent; whereas improving the availability of water taps from the worst (one per 1,000 population) to the best (nearly 60 per 1,000) in our settlements would reduce the sickness prevalence rate by only 7 per cent. The actual range of prevalence rates, that is, the proportion of people reporting sickness in the previous 15 days, was, from the worst to the best settlement in this respect, 31 per cent and 4 per cent, respectively. In the case of children aged between one and five, however, the difference between the effects of the improvements just described would appear to be rather small.



This underutilized sites-and-services scheme was located on cheap land, but had inadequate transport.

It should be stressed that the use of a single index of environmental quality such as the provision of tap water is insufficient. It may correlate rather well with other desirable environmental and behavioural characteristics like good water handling, absence of stagnant water, well-flushed drains, as it happens to do in our best settlements). On the other hand, it may not, as indeed it does not, in two other of our settlements, where, except for water and toilet provision, desirable environmental features are lacking. We should note in passsing that the proportion of low-income households in the settlement did not relate closely to our morbidity rates, implying that a higher income alone cannot counter the deleterious effects of living in a degraded environment.

A different way of looking at the same point is to say that although slum upgrading by the provision of taps and latrines may improve levels of health, a greater improvement can usually be achieved if this provision is made in combination with other measures.

Table 1. Relationships between the provision of taps and latrines, a clean environment, and the prevalence of disease in seven shanty settlements*

	Prevalence of sickness in population	*Prevalence of sickness in children (aged 1 to 5)*	*Prevalence of sickness in infants (aged under 1)*	*Prevalence of diarrhoea in population*
Taps per head	-0.28	-0.52	-0.40	-0.21
Latrines per head	-0.33	-0.55	-0.43	-0.19
Environmental index (logged)	-0.74	-0.62	-0.58	-0.69

* Source: Survey of 480 Pune households, 1980.

Slum organization and politics

The observations just made raise two crucial issues that are ultimately political in nature. The first is that the maintenance of facilities once provided will often depend on the nature of community organization within the slum settlement itself. For example, even if the local authority is required by law to clear garbage from a recognized dump, it may not do so, and in any case the cleaning of lanes and drains within a settlement has often to be organized by the people themselves. In our environmental index, only one settlement scored a full point for cleanliness, and that one was distinguished by the enlightened views of one of its leaders and the power his committee managed to exert over community members to keep their environment clean. The ability of a slum community to make an organized representation to the local authority to obtain the cleaning services that are due, or alternatively to manage these services itself, will be limited by rivalries and conflicts between different political groups within the slum. Heterogeneity of caste or

Table 2. Components in an index of environmental quality for each of seven shanty settlements*

Settlement code name	*Drinking-water*	*Latrines*	*Garbage removal*	*Spacious-ness*	*Airiness*	*Absence of damp*
KA	1 (106)	1 (80)	0	0	0	1
KI	1 (272)	1 (109)	0	0.5	0	0.5
PI	0.5 (833)	0 -	0	0	0	0
PA	0.5 (1,000)	0 -	0	0	0	0
G	1 (281)	1 (125)	1	1	0.5	1
R	1 (1,075)	0.5 (537)	0.5	0	1	1
B	1 (17)	1 (13)	1	1	1	1
			1			

*Note: figures bracketed indicate persons per water tap and persons per latrine.
Source: Survey of 480 Pune households, 1980.

religion make such rivalries more likely.

The second political issue arises from the fact that the components in a good quality environment require physical space for their provision: a glance at our list above reflects this clearly. Neither drinking-water nor latrines can be provided without land being made available. The cleaning of drains and pathways is greatly facilitated if some minimal planning of pathways and drainage courses is undertaken. And the need for a dry and well-ventilated environment can only be met if certain marginal lands are excluded from residential use, for example low-lying marshy land, exhausted quarries, or river and canal margins subject to flooding.

In a flourishing urban area such as Pune the cost of land rises sharply as one moves from the urban periphery towards central city areas. The only exception to this rule is the type of land just described, which, being unsuitable for building on is unattractive to property developers, and so is also obtained cheaply. Improvements in environmental quality of settlements that are not already on the periphery would require buying prime land for that purpose. Whether such land is currently owned privately or by the local authority, the financial returns from its development for commercial or middle-class residential purposes are extremely high. Only a local authority that is politically and financially separate from the interests of property owners and developers would be prepared to allow such land to be used for slum upgrading. Such disinterested local authorities rarely exist, and Pune's are no exception.

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Land management

The crucial importance of land in this context has been recognized explicitly by the private sector and by the Indian government. In 1976, for example, an Urban Land (Ceiling and Regulation) Act was passed for the express purpose of preventing the concentration of urban land in the hands of a few. It was a classic example of a piece of legislation enacted in the name of the poor, but skilfully manipulated to benefit private builders.[2] The main objective of the Act, as explained in the preamble, is to 'prevent concentration of urban lands in the hands of a few persons and prevent speculation and profiteering therefrom, and with a view to bring about equitable distribution of urban agglomeration to subserve the common good'. In practice, however, it has not prevented private developers from getting a firm stranglehold on the urban land and property market.

In these conditions, creating improved living environments for slum dwellers is clearly not a problem of better formulation and efficient implementation of slum improvement schemes.

In the case of Pune specifically it is no accident that of our seven settlements, the only one to score well on all three components in our environmental index that require most land, namely spaciousness, airiness, and dryness, is situated on the periphery of the city, where land is cheaper (and in this case unsuitable for real estate development, being on government land). However, we are not advocating the relocation of shanty settlements to the urban periphery: for employment would be more severely restricted, and incomes, already miserably low, would fall as a result. The effect can be disastrous for nutrition, and so for health. Nor are we suggesting that very large amounts of prime land need to be freed. But it is the case that some additional good quality land will need to be allocated if slum upgrading schemes, by going beyond the mere provision of taps and latrines (important though these are), are to be fully effective in improving health. And this, we wish to stress, is a problem not only of design and planning, but also of politics and power.

References

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