

236

## INDEXED

# Community Health Workers in a Peruvian Slum Area: An Evaluation of Their Impact on Health Behavior<sup>1</sup>

PEER BREHM CHRISTENSEN<sup>2</sup> & SUSAN KARLQVIST<sup>2</sup>



*In 1986 the authors conducted a survey examining the performance of health promoters in Pucallpa, Peru, three years after an initial Danish project for training and supervising those promoters ended. The survey found that some two-fifths of the promoters were still active, that increased stress had been placed on curative tasks, and that the promoters appeared to have had their greatest impact in the areas of vaccination coverage and increased use of the available public health care service. No significant changes were found in the affected population's treatment of diarrhea or improvement of drinking water quality.*

**B**etween 1976 and 1983 the International Medical Cooperation Committee (IMCC), a Danish nongovernmental organization providing assistance to developing countries, trained and supervised health promoters (*promotores de salud*) in Peru. Some of these workers have been employed by the public health service or served as unpaid volunteers elected by the community. The health promoters discussed in this article fall into the latter category. The training of health promoters was part of a primary health care project for which the IMCC was responsible. The project, costing about US\$400,000, was financed by the Danish International Development Agency (DANIDA). Described in detail in references (1) and (2), the project was transferred to the Peruvian public health service in 1983.

The present article describes the results of an evaluation that was carried out in 1986, 30 months after the IMCC's work ended, to assess the activity level of the health promoters and the effects of their work upon the communities they served.

## BACKGROUND

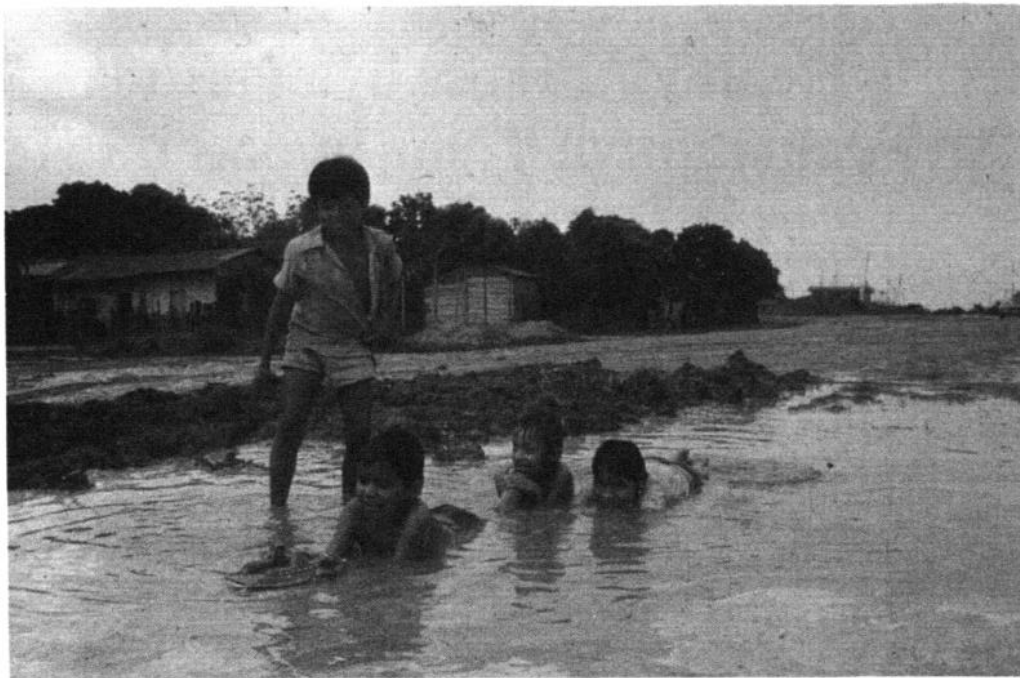
The health project was started in the 1970s in slum areas around Pucallpa, a large town situated in the Amazon Jungle. Pucallpa then had about 130,000 inhabitants, primarily Spanish-speaking mestizos, and was growing.

The slum area served by the health promoters had come into being about 20 years previously as a result of collective land occupation. About 4,000 people were living there, with units of roughly 40 families (200–250 persons) constituting what was called a neighborhood committee (*comité vecinal*). Two health promoters were trained in every committee served.

The slum dwellers were living in wooden shacks on plots of land containing roughly 300 square meters. Only 10%

<sup>1</sup>This article will also be published in Spanish in the *Boletín de la Oficina Sanitaria Panamericana*, Vol. 109, 1990.

<sup>2</sup>International Medical Cooperation Committee (IMCC), Copenhagen, Denmark. Correspondence should be addressed to P. B. Christensen, Rolf Krakes Vej 11, Thurø, DK-5700 Svendborg, Denmark.



Polluted water resulting from insufficient drainage and poor sanitation leads to a high incidence of diarrhea. (Photo by S. Samuelson.)



Health promoters at work. (Photo by P. B. Christensen.)

to 20% had stable employment. The majority of those employed had occasional jobs involved with trading, transport, or fishing.

Health conditions in the slum area were poor. Hygiene was inadequate as a result of crowding, polluted water provided by the few heavily contaminated common wells, lack of drainage, and

nonexistent sanitation. There was no electricity. Half the children below five years of age were malnourished, with 1% exhibiting third degree malnutrition as defined by Ramos Galván (unpublished data). Infant mortality was high: Official figures indicate there were roughly 120 infant deaths per 1,000 live births, though this is probably an underestimate

(Pucallpa Hospital, personal communication). Diarrhea was the most common cause of infant death (2).

A health center in the slum district was open on weekdays from 8 am to 2 pm. This center, which was within half an hour's walking distance of all the slum dwellers, was staffed by a doctor, a nurse, and four auxiliaries. In addition, a public hospital with 150 beds that was open day and night was located in the center of Pucallpa, about an hour's walk away. There was also a private health sector, but this was too expensive to be used on a regular basis by most slum residents. (All the slum dwellers who had stable employment were covered by health insurance that provided care facilities and paid all costs.)

Traditional healers seemed to play a smaller role than in rural communities, probably because the slum residents formed a mixed group with little common cultural background. The influence of traditional healers was not studied.

## THE HEALTH PROMOTER PROGRAM

The program set up three courses that trained 43 health promoters. The trainees, who had to be at least 18 years of age, literate, and motivated for the work, were elected by their neighborhood communities and approved by IMCC personnel. Personal data on 30 of these health promoters are shown in Table 1.

The courses, which took 60 to 90 hours to complete, dealt with the following subjects: prevention and cure of common diseases, maternal and child care, hygiene and sanitation, organization of health work, and injection techniques.

Upon completion of the course, each health promoter was given a medicine kit containing basic curative equipment (including syringes and needles for injection of medicaments prescribed by physi-

**Table 1.** Data indicating the socioeconomic circumstances of the 30 health promoters interviewed.

Number (number of women)	30	(28)
Age in years: median (range)	36.5	(20-45)
Married	21	
Members of family: median (range)	6.5	(2-15)
No. of children: median (range)	4	(0-10)
No. of children below 5 years of age: median (range)	1	(0-3)
School attendance in years: median (range)	7	(3-14)
Working outside the home	18	
Family has stable employment	8	
Average family income per day: median (range), in 1986 US\$	3.5	(1.2-11.8)

cians) and five types of medicine: two analgesics, two antispasmodics, and a topical antibiotic powder.

The health promoters were assigned the following tasks:

- to make the population aware of collective solutions available for resolving health problems;
- to support and strengthen the neighborhood community's preventive efforts;
- to give first aid, treat the most common diseases, and refer patients to the health center.

All of the health promoters' work was voluntary and unpaid. The population decided that expenses for materials should be covered by the treated patients.

Most supervision provided during the project was performed by the IMCC. The promoters worked in small groups as part of collective campaigns for the whole area, e.g., campaigns for weighing children, vaccination, and cleaning wells and common areas. The promoters' group coordinated its activities at a monthly meeting in which the nurse from the health center often participated. The work was

performed in cooperation with the local residents' organization.

At the end of the project the health center became responsible for supervision. Thereafter supervision became less intense—owing primarily to the center's limited resources and rapid staff turnover.

During the 18 months before the evaluation reported here, the World Bank financed a project that provided systematic home visits every third month to a region that included the whole area served by the health promoters. This project employed eight full-time field auxiliaries whose training was similar to that of the health promoters and whose work closely resembled that of the health promoters. (One of the eight field auxiliaries was in fact a health promoter.) This project was cancelled shortly after our evaluation for lack of financial resources, and the personnel involved were transferred to other areas.

## EVALUATION METHODS

The evaluation reported here was carried out during January 1986 by one of the authors (PBC) who had previously worked for the project as a medical student. It was based upon interviews with the health promoters and a household survey.

The promoter interviews were conducted by PBC and his wife (who had worked on the health promoter program during the project). The interviews took the form of guided conversations lasting between one and two hours. The interviewed promoters were asked 86 questions derived from a WHO prototype protocol (3) and were given a written test on the subject of diarrhea. A 20-point checklist was used to record each promoter's activities. In the absence of Peruvian or international standards for monitoring the health promoters' activities,

we developed our own criteria in coordination with the public health service and the health promoters themselves.

In addition, the aforementioned household survey was carried out in order to assess the effects of the health promoters' work upon the population served. A 20% sample of houses was selected by choosing every fifth house in each block. If it turned out that the family in the house selected had not lived there for at least a year, the neighboring house was selected instead.

The evaluation was complicated by the fact that the World Bank project's field auxiliaries had worked for 18 months in the same area served by the health promoters for the previous five-and-a-half years. To help deal with this complication, the household survey covered three different slum areas. These were (1) the health promoter area, where the field auxiliaries had also worked (this sample included 152 households); (2) a control area where neither health promoters nor field auxiliaries had worked (this sample included 82 households); and (3) an area where only the field auxiliaries had worked (this sample included 130 households). No area where only health promoters had worked was included because no such area existed. The three areas were comparable with respect to neighborhood age, prevailing socioeconomic conditions, and distance to the health center.

The survey interviewer asked the mother of the household (in rare cases the father) a list of 20 questions about health behavior. The whole survey was completed in one week by 21 workers (including health promoters, health center employees, and two teachers from the slum area). These workers received payment for their work. No health worker carried out interviews in his or her own district. Repeat interviews, conducted by IMCC personnel and the teachers,

showed good correlation with the results obtained by the interviewers. The  $\chi^2$  test, with Yates' correction, was used for statistical analysis;  $p < 0.05$  was used as the level of significance.

After processing, the results were presented to the health promoters, the local community organization, and local health authorities.

## RESULTS AND DISCUSSION

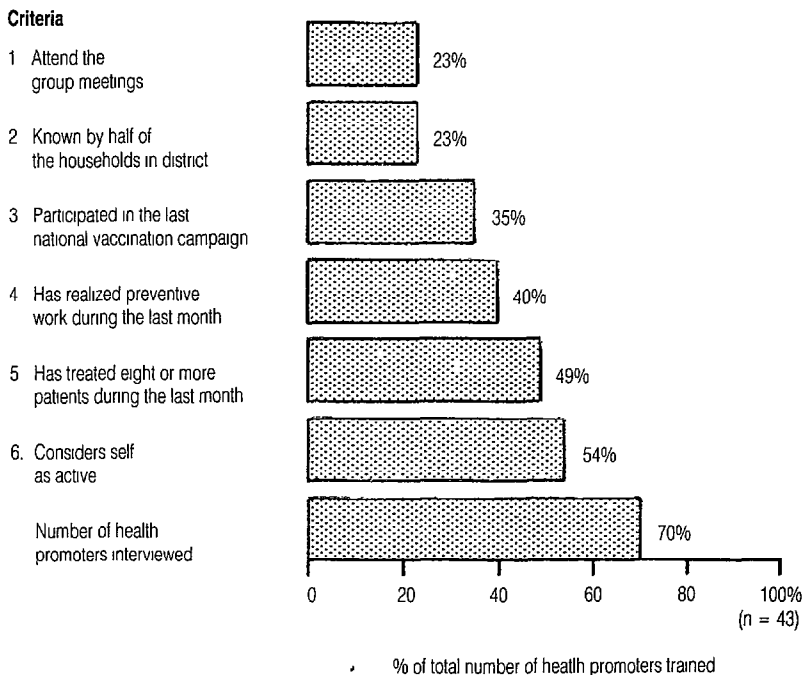
Various methods are available for evaluating primary health care (4). The method we used focused upon the health promoters' performance and their immediate effect upon the population, as indicated by changes in behavior. Other matters covered included the number of health promoters still active, the dropout rate, and the health promoters' socioeconomic conditions.

In all, 30 health promoters (70% of the 43 who completed the course) were interviewed. Regarding the other 13, who could not be located, every effort was made to determine their reasons for leaving the group through interviews with family members, neighbors, and other health promoters.

## Activity

Six criteria (see Figure 1) were used to get an indication of health promoter activity. In our opinion the active promoters were those who met one or more of the first three criteria; that is, they attended group meetings, were known by at least half the households in their district, or had participated in major community health work within the preceding three months, e.g., the last national vaccination campaign.

**Figure 1.** Percentages of the 43 initially trained health promoters who were still active at the time of the 1986 survey, according to six different criteria.



According to this standard, 17 health promoters (40% of those originally trained, 57% of those interviewed) were "active" 30 months after the project ended. This is a minimum figure, because it is very likely that some of the 13 health promoters not located were continuing to work elsewhere.

In assessing the health promoters' degree of activity, it is important to consider their general circumstances. Among other things, most of them were unemployed, the social structure of their society was unstable, and most of them were women who had to spend most of their time caring for their families. In view of this, we find the result acceptable. Other authors have reported similar findings, but there has also been great variation in the results reported by different studies (5-9). Ofusu-Amaah (9) indicates that 40% to 80% of those studied were still "active" after two years. The variation was partly due to different definitions of "active" and partly to differences in specific health promoter programs. In general, it appears that rural and paid promoters tend to be "active" for longer periods than voluntary health promoters

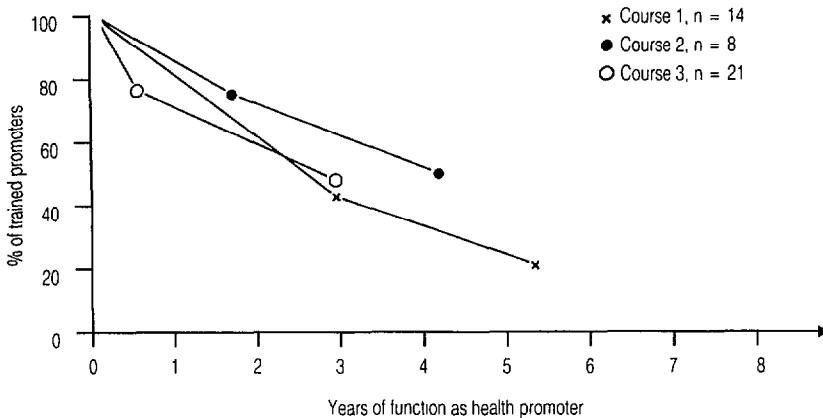
in slum districts, and also that longer-lasting programs tend to stimulate longer activity.

To effectively compare the "activity" of promoters in different programs, the criteria used to gauge such activity must be the same. We suggest the following should form part of any such criteria: (1) attendance at health promoter meetings, (2) participation in a reasonable number of health activities, and (3) procurement of public acceptance—as indicated by such things as recognition by the public as a health promoter, reported use of the promoter's services, and reported satisfaction with the work performed.

### Dropout Rate

The health promoters were trained through one of three different courses given at three different times. Therefore, they were supervised by IMCC personnel for varying lengths of time (half a year, one-and-a-half years, and three years) between the time they completed their training and the time when IMCC departed in mid-1983. In addition, the criteria for election of the members of

**Figure 2.** Percentages of the 43 initially trained health promoters who were still active at differing lengths of time after their training courses ended, by the three course classes trained.



each group differed, as did the structure of their courses.

Figure 2 shows the percentage of still-active health promoters as a function of their length of service in January 1986. This chart indicates that the dropout rates among the three groups involved were very similar. That is, after three years approximately half of the health promoters remained active. This suggests that the variations involved could have a relatively minor influence upon length of service under the conditions prevailing in this project.

With respect to the 26 health promoters no longer active at the time of the survey, the reasons they gave for no longer being active were recorded. The most frequent causes cited were employment/studies (in 11 cases), pregnancy/child rearing (in 8 cases), and personal disagreements within the health promoter group (in 4 cases). These reasons appear to reflect conditions of life prevailing in a typical slum area, conditions upon which a small-scale health project has very little influence. It might be better if health promoters could be chosen from among settled people with stable jobs, but this is seldom the case. It also seems important to train the group in solving personal conflicts, since such conflicts can cause desertion.

In general, it appears that no matter who is selected, and whatever the level of supervision, continuous training and integration of new health promoters will be necessary in order to overcome attrition. In our study the attrition rate was approximately 20% of the group per year.

### **Socioeconomic Conditions**

The health promoters' socioeconomic circumstances are indicated in Table 1. Compared to the 13 "passives," the 17 "actives" tended to be slightly older with smaller families, less schooling, and

more participation in work outside the home. However, the differences involved were too small to permit any definite conclusions.

Other authors have stressed that a health promoter should be mature in age, socially engaged, and literate (9). However, health promoters' performance and dropout rates are often related to their socioeconomic circumstances (9). Therefore, as our experience suggests, when electing health promoters it is important not only to focus upon each person's motivation but also to find out if socioeconomic circumstances will permit him or her to work as a health promoter.

### **Performance**

Table 2 shows the preventive and curative activities reported by the health promoters in the month preceding the survey. The data indicate that the health promoters performed an average of one health activity per person per day during the month in question. Overall, 21% of these activities were preventive and 79% were curative. The most frequent activity (accounting for 34% of all the reported activities) was injection of medications other than vaccines.

The injections were mostly prescribed by a doctor, but considerable misuse of medications took place in the project area. The types of medicine were not registered, but were known to be mostly broad-spectrum antibiotics and vitamins. It is questionable whether health promoters should be trained in injection techniques; injections do not pertain to this level of the health system, and the medical justification for many of the injections given is in any case very weak or nonexistent. The training in giving injections was a compromise made necessary by the population's tradition of self-medication, and it was a condition needed in order for the health promoters

**Table 2.** Types of health activities performed by the 30 health promoters interviewed in the month preceding the evaluation, showing the number of each type performed and the percentage of all activities accounted for by each type.

Types of activities	Activities performed	
	% of total	(No.)
<i>Curative activities:</i>		
Injections	34.4	(303)
Distribution of oral rehydration salts	17.6	(155)
Wound treatment	13.8	(122)
Referral of patients to the health center	7.8	(69)
Other curative activities <sup>a</sup>	5.0	(44)
Total curative activities	78.6	(693)
<i>Preventive activities:</i>		
Home visits <sup>b</sup>	10.4	(92)
Referral to the health center's preventive programs <sup>c</sup>	7.4	(65)
Teaching the population	3.1	(27)
Other preventive activities <sup>d</sup>	0.6	(5)
Total preventive activities	21.4	(189)
Total activities (all)	100	(882)
No. of activities per health promoter		(29)

<sup>a</sup>Visits to people with acute illness, attendance at deliveries.

<sup>b</sup>Visits made to households without being called there to deal with acute illness.

<sup>c</sup>Prenatal care, under-fives clinic, nutrition programs, etc.

<sup>d</sup>Construction of pit latrines, cleanup campaigns, and community vegetable gardens.

to be accepted by their neighbors as health workers.

The most frequent preventive activity was the home visit (visiting a home without being called there to deal with an acute illness). However, home visits accounted for only 10% of all the reported activities, a percentage lower than that found by other studies (7, 8, 10). The reason for this is that—in contrast to many other health promoter programs—systematic home visiting was not made an integral part of our program, it being felt that systematic home visits would demand too great a time commitment from voluntary part-time health promoters.

The survey did not include data on the time spent by the promoters on their various activities, so that time-consuming tasks, mainly preventive ones, were underestimated. However, if one estimates that on the average each activity took between half an hour and an hour to com-

plete, it would appear that the promoters worked an average of 15 to 29 hours per month.

The health promoters' level of activity at the time of the survey can be compared with their level of activity three years earlier, shortly before the end of the project. This earlier level of activity has been calculated retrospectively from the monthly reporting of 11 health promoters over a two-month period. At that time the number of activities was 25% lower, but the curative activities represented only 60% of the total. Since the preventive activities are considerably more time-consuming, on the average, than the curative ones, it is our general impression that the average health promoter's total work load had diminished since the project ended, although the number of registered activities had increased—an opinion voiced by many health promoters during their interviews. The rise



in curative activities has been appreciated by the population, however, since it complies with the perceived needs of the people.

Other studies have obtained similar findings. For example, Heggenhaugen, et al. (11), working in Tanzania, found that curative functions rose from 21% initially to 49% after two years of health promoter activity.

This drift toward increased curative activities is cause for medical concern, considering the short training period involved. Specifically, there is a risk that health promoters might conduct their activities in such a way as to risk harming their patients. To avoid this, continuous and careful supervision and support of health promoters' work is essential.

Another important factor influencing health promoter activity levels is the local community's organization and leadership. In particular, preventive activities are very dependent upon community support and understanding. In the case of our project, the decline in preventive activities coincided with growing disorganization within the slum area in recent years.

### **Public Acceptance of the Health Promoters**

As previously noted, 152 household interviews were conducted in the health promoter-field auxiliary area, 130 in the field auxiliary area, and 82 in the control area. Ninety-seven percent of these interviews were conducted with the mother of the household and 3% were conducted with the father. The people interviewed in each area were comparable with regard to sex, years of residence in the slum area, and number of children under five years of age.

Over half (57%) of those interviewed in the health promoter area knew their health promoters, and 10% had been in

contact with them about health problems within three months of the interview. Of those who knew their health promoters, 45% were satisfied with their work, 10% were dissatisfied, and 44% said they "didn't know."

In general, the residents interviewed focused on the promoters' curative activities, only a few mentioning their preventive work. As a reason for being satisfied, they commonly said that the health promoter was cheaper than other health services in the area and was present when needed.

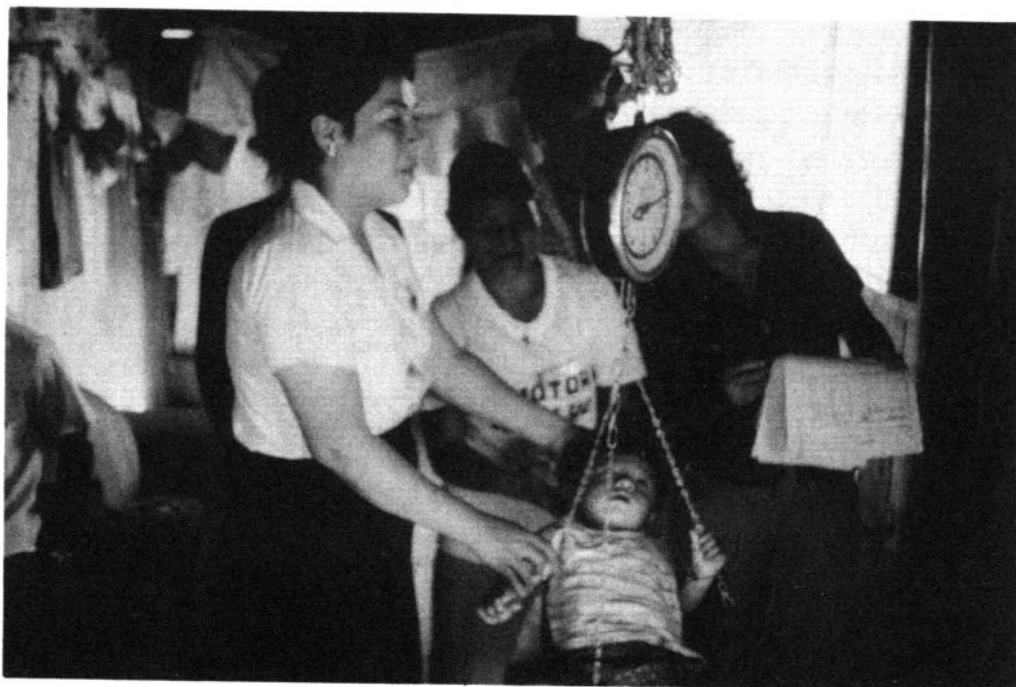
Public acceptance of the health promoters had also been evaluated immediately after the project ended 30 months earlier (12). At that time 98% of the residents interviewed knew their health promoters, and 82% were satisfied with their activities. This suggests that there has been a decline in public acceptance of the health promoters since the end of the project.

### **Health Literacy**

This term, originally introduced by WHO, has been defined as "an understanding of prevailing health problems and of appropriate methods of preventing and controlling them" (13).

Table 3 summarizes the interview subjects' statements about causes of health problems in the three slum areas involved. These statements indicate that the residents had a better understanding of health problems' causes in the area served by the health promoters and field auxiliaries (Area 1) than in the control area served by neither (Area 2).

In general, the people interviewed showed considerable understanding of hygiene's importance. Similar understanding has also been found in other studies; for example, a 1984 Peruvian survey of 20,000 families found that 41% of those queried cited hygiene as having



Health promoters conducting a house-to-house weighing. Of 800 children weighed, 50% were found to be malnourished. (Photo by M. K. Andersen.)



Health promoters directing a cleanup of slum area streets. (Photo by S. Karlqvist.)

an important bearing on health problems (14).

In the area served by the health promoters and field auxiliaries, 37% of the respondents ascribed a decisive importance to the people's own organization in solving health problems, as compared to 21% of the respondents in the control area.

Overall, these results indicate a relatively higher level of health literacy in the area served by the health promoters.

### **Health Behavior**

The data in Table 4 indicate that the percentage of fully vaccinated children was nearly twice as high in the area

**Table 3.** Causes of health problems in the slum area, as perceived by the persons interviewed in the household survey.

	% of all answers citing the indicated cause					
	Area 1 <sup>a</sup>		Area 2 <sup>b</sup>		Area 3 <sup>c</sup>	
<i>Answers taken as indicating health literacy:</i>						
Hygiene	30		23		25	
Economic problems	7 <sup>d</sup>		1		4	
Malnutrition	5		4		8	
Disorganized population	5		3		1	
Subtotal (number of answers shown in parentheses)	46	(113) <sup>d</sup>	30	(43)	39	(81)
<i>Answers not taken as indicating health literacy:</i>						
Common illness <sup>e</sup>	20 <sup>d</sup>		34		33	
No health problems	8		9		5	
Lack of curative services	7		2		8 <sup>d</sup>	
Others <sup>f</sup>	12		17		14	
Do not know	6		8		1 <sup>d</sup>	
Subtotal (number of answers shown in parentheses)	54	(131) <sup>d</sup>	70	(99)	61	(129)
(Total number of answers <sup>g</sup> )		(244)		(142)		(210)
(Total number of interviewed households)		(152)		(82)		(130)

<sup>a</sup>Area served by health promoters and field auxiliaries.

<sup>b</sup>Area served by neither health promoters nor field auxiliaries (control area).

<sup>c</sup>Area served by field auxiliaries only.

<sup>d</sup>Significantly different from control area,  $p < 0.05$ .

<sup>e</sup>The person interviewed did not cite causes of illness, even after the question was explained.

<sup>f</sup>Lack of electricity, bad roads, people's ignorance, etc.

<sup>g</sup>Some of those interviewed cited more than one cause, the average number of causes cited per interview subject being 1.6.

served by health promoters and field auxiliaries (Area 1) than it was in the control area (Area 2), and that 14% more mothers had participated in the prenatal care program. On the other hand, there appeared to be no significant difference between the areas regarding attendance at under-five clinics. It thus appears that the work

of the health promoters and field auxiliaries resulted in better utilization of some public health services.

The data in Table 5 reveal no significant differences in drinking water hygiene in areas 1 and 2. Fewer than half the respondents in both areas said their families were drinking boiled water, and only

**Table 4.** Interview households' use of several public maternal and child health services. The data reported are for the youngest child, and the only households included are those that had children under five years old.

	Answers					
	Area 1 <sup>a</sup>		Area 2 <sup>b</sup>		Area 3 <sup>c</sup>	
	No.	(%)	No.	(%)	No.	(%)
Mother has attended the prenatal care program	58	(54)	23	(40)	63 <sup>d</sup>	(69)
Child has attended the under-fives clinic	37	(35)	18	(31)	34	(37)
Child has been completely vaccinated <sup>e</sup>	72 <sup>d</sup>	(67)	21	(36)	58 <sup>d</sup>	(64)
Interview households with at least one child under five years old	107	(100)	58	(100)	91	(100)

<sup>a</sup>Area served by health promoters and field auxiliaries.

<sup>b</sup>Area served by neither health promoters nor field auxiliaries (control area).

<sup>c</sup>Area served by field auxiliaries only.

<sup>d</sup>Significantly different from control area,  $p < 0.05$ .

<sup>e</sup>According to the national norm for the child's age, as reported by the mother. Vaccination certificates were not used in the areas involved.

**Table 5.** Interview households' reported and observed behavior with regard to drinking water hygiene, knowledge of oral rehydration drink, and treatment of childhood diarrhea.

	Positive answers or indicators					
	Area 1 <sup>a</sup>		Area 2 <sup>b</sup>		Area 3 <sup>c</sup>	
	No.	(%)	No.	(%)	No.	(%)
<i>Drinking water hygiene at all the interview households:</i>						
Total interview households	152	(100)	82	(100)	130	(100)
Households where respondent said family always drinks boiled water	63	(41)	30	(37)	33	(25)
Households where boiled water was present at time of interview	53	(35)	23	(28)	43	(33)
<i>Knowledge of oral rehydration drink<sup>e</sup> at all the interview households:</i>						
Households where respondent claimed knowledge of oral rehydration drink	93 <sup>d</sup>	(61)	33	(40)	61	(47)
Households where respondent provided a quantitatively correct recipe for oral rehydration drink	31 <sup>d</sup>	(20)	4	(5)	29 <sup>d</sup>	(22)
<i>Treatment of childhood diarrhea:</i>						
Total number of treatments cited <sup>f</sup>	203	(100)	121	(100)	161	(100)
Give medicine <sup>g</sup>	87	(43)	56	(46)	79	(49)
Seek medical assistance	35	(17)	16	(13)	27	(17)
Use oral rehydration drink	42	(21)	26	(21)	30	(19)
Use household remedies or plant medicine	37	(18)	23	(19)	24	(15)
Others	2	(1)	0	(0)	1	(1)

<sup>a</sup>Area served by health promoters and field auxiliaries.

<sup>b</sup>Area served by neither health promoters nor field auxiliaries (control area).

<sup>c</sup>Area served by field auxiliaries only.

<sup>d</sup>Significantly different from control area ( $p < 0.05$ ).

<sup>e</sup>Oral rehydration drink is a homemade drink consisting of specific proportions of boiled water, salt, sugar, and lemon juice that health promoters and the public health service recommend when a child has diarrhea.

<sup>f</sup>Some respondents cited more than one kind of treatment.

<sup>g</sup>Mainly antibiotics—23% out of 43% in the health promoter and field auxiliary area, 31% out of 46% in the control area, and 24% out of 49% in the field auxiliary area.

a third or so had boiled water available in the house during the interview. The drinking water hygiene was no better in those areas where only the field auxiliaries had worked. Overall, it appears that the health promoters were unable to achieve an acceptable level of drinking water hygiene through their activities (e.g., conducting well-cleaning campaigns, providing education about diarrhea and its prevention, etc.).

With regard to oral rehydration for diarrhea treatment, the Table 5 data indicate that respondents in the health promoter/field auxiliary area had better knowledge of the recommended homemade "oral rehydration drink" than re-

spondents in the control area, but that they did not make greater use of it. This is a common pedagogic experience (knowing is not the same as doing), and the cheap new homemade drink is not considered as powerful as the expensive medicines or old well-known household remedies. In our opinion it is not satisfactory that only a third of the households surveyed used homemade rehydration fluids and that about half used medicines in the treatment of simple diarrhea.

The fact that less than a third of the respondents could give the right recipe for the oral rehydration drink does not necessarily mean that all the rest were unable to prepare it. Among other

things, use of measures was not traditional among the survey population. It would probably have been more appropriate to ask them to prepare the actual drink, but this was not possible for practical reasons.

Summing up the effects of the health promoters' work upon health behavior as indicated by our survey, the effects appeared most marked with regard to stimulating use of the public health care system. Some improvement was achieved in knowledge of diarrhea treatment, but significant changes in actual diarrhea treatment or drinking water hygiene were not observed.

### **Paid versus Voluntary Health Promoters**

During the study reported here, an effort was made to evaluate the effect of systematic home visits made by the field auxiliaries in the area where the health promoters had never worked. Data from this area were generally similar to data from the area where the field auxiliaries and health promoters had both worked; these results have been presented in detail elsewhere (2).

Both the health promoters and field auxiliaries seemed able to change the study population's health behavior in certain ways over a fairly short period. The survey results do not permit us to conclude which of the two groups was primarily responsible for these changes, since the survey was not designed for that purpose. However, it is noteworthy that the field auxiliaries' recipe for oral rehydration drink differed from the health promoters' recipe, and that 64% of the respondents who were able to provide a correct recipe in the area where both groups worked said they used the health promoters' recipe.

## **CONCLUSIONS AND RECOMMENDATIONS**

Using our definition of "active," the survey found that 17 (40%) of the trained health promoters were still active 30 months after the project ended. Within this context, it should be noted that standardized criteria are needed if one is to compare different health promoter programs. In general, our experience to date suggests that three useful criteria for defining who is an active promoter are the promoter's participation in meetings, the promoter's performance of health activities, and the served population's acceptance of the promoter's work.

The relatively high dropout rate found by our survey appeared to have been caused mainly by factors over which the project had little control—namely, the promoters' occupational status and child-rearing responsibilities. This suggests that ongoing refresher courses and integration of new health promoters into the program are necessary. We also recommend that health promoters be chosen from among community residents of mature age (over 25 years) with steady jobs. In addition, it would seem advisable for health promoters to be trained in resolution of group conflicts, because personal disagreements appear to be a cause for dropping out.

With regard to health promoter performance, the survey found a trend toward increased curative activity. This appears worrisome and underscores the need to make close ongoing supervision and support an integral part of the health program for a long time (something on the order of a decade) after initial training, especially in the area of preventive medicine.

The health promoters' impact upon the population served appeared most marked in stimulating improved vaccina-

tion coverage and greater utilization of the available public health care service. Some improvement was also found in knowledge of diarrhea treatment, but no improvement was noted regarding actual treatment of diarrhea or drinking-water quality.

It was not possible to identify particular socioeconomic conditions related to especially good health promoter performance and effects upon the community involved.

A higher level of health literacy was achieved in the area being served by the health promoters.

Overall, in the authors' assessment the survey results presented here support the view that health promoters should continue to be a part of the primary health care strategy.

## REFERENCES

1. Soegaard, U. IMCC's sundhedsprojekt i Peru. *Journal of the Danish Medical Association* 31:2117-2119, 1987.
2. Christensen, P. B., and S. Karlqvist. Primaere sundhedsarbejdere i peruviansk slumby: Evaluering af IMCC's promotorprogram treår efter projektafslutning. Report to DANIDA (the Danish International Development Agency). Copenhagen, 1986, 62 pp.
3. World Health Organization. Review of Primary Health Care, Prototype Protocols. WHO Document SHS/PHC Review/84/1-7. Geneva, 1984.
4. Kroeger, A. Health interview survey in developing countries: A review of the methods and results. *Int J Epidemiol* 12:465-481, 1983.
5. Bolduc, V. C., and R. B. Dufault. Una experiencia de pastoral sanitaria. *Shupihui* 4:303-309, 1979.
6. Corzantes, C. A., and R. Delgado. Setting standards for monitoring the performance of primary care personnel-outreach workers. *Journal of Ambulatory Care Management* 3:35-52, 1980.
7. Bhattacharji, S., S. Abraham, J. Muliylil, J. Job, K. John, and A. Joseph. Evaluating community health worker performance in India. *Health Policy and Planning* 1(3):232-239, 1986.
8. Rubin, G., C. Chen, Y. de Herrera, V. de Aparicio, J. Massey, and L. Morris. Primary health care workers: The rural health aid program in El Salvador. *Bull Pan Am Health Organ* 17:42-50, 1983.
9. Ofusu-Amaah, V. *Experiencias nacionales en el empleo de trabajadores de salud de la comunidad*. Organización Panamericana de la Salud. OPS Publicación Científica no. 459. Washington, D.C., 1984.
10. Feuerstein, M.T. Evaluation—by the people. *Int Nurs Rev* 25:146-153, 1978.
11. Heggenhougen, K., P. Vaughan, E. P. Y. Muhondwa, and J. Rutabanzibwa-Ngaiza. *Community Health Workers: The Tanzanian Experience*. Oxford University Press, London, 1987, 205 pp.
12. Henriksen, L. O., and I. S. Samuelsson. How did the IMCC influence the slum district 9 de Octubre in Peru? Results of an interview investigation after the conclusion of a health care project. *Journal of the Danish Medical Association* 149:2749-2751, 1987.
13. World Health Organization. *Development of Indicators for Monitoring Progress Towards Health for All by the Year 2000*. WHO "Health for All" Series, No. 4. Geneva, 1981, 92 pp.
14. Perú, Instituto Nacional de Estadística y Ministerio de Salud. Encuesta Nacional de Nutrición y Salud 1984, Perú. Lima, 1986.