

Rural Health Examination Survey in Ghana

Nonresponse factors

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LITTLE IS KNOWN about why people do not participate in health surveys, although it is well known that nonresponse can seriously reduce a survey's usefulness. Nonparticipants may have different sex, occupation, and health characteristics from those who are surveyed; in such instances, the demographic data may be skewed or the illness patterns distorted.

The Danfa Comprehensive Rural Health and Family Planning Project, Ghana, is an 8-year research project to obtain information about the effectiveness and cost of family planning and health care programs in West Africa (1). The research, supported by the U.S. Agency for International Development, is being conducted by the Ghana Medical School, the Ministry of Health of Ghana, and the University of California at Los Angeles School of Public Health.

To obtain information about the type and extent of morbidity in the project population, particularly preventable diseases, health surveys are being carried out in Ghanaian villages. A random cluster sample comprised of 20 rural villages was studied from January to March 1973 for baseline information, and two more surveys were scheduled for evaluation of the health program. A description of the planning and operation

of the village health survey has been published (2).

A followup study of nonparticipants in the 1973 survey was undertaken to learn why they did not attend the health examination clinics and what their health problems were. The results of followup visits to nonparticipants were used to make the survey examination data more accurate and to provide feedback that would help improve motivational techniques and clinic procedures for resurveys in the same villages.

Methods

High response rates were essential to accomplish the project's research goals. To increase community and individual participation in the village health survey, special efforts were made to contact selected villages in advance. Two weeks before the survey, the investigators held discussions with the traditional leaders in each village to answer questions and to explain that the survey's purpose was to provide information to the Ministry of Health for planning health programs. The investigators emphasized the opportunity for each villager to be examined by a physician. Also, to enhance response pretests were held in four nonsurvey villages before the definitive survey was started. These pretests provided valuable insight into potential fears or misunderstandings about health examinations.

Motivational efforts were intensified by the placement of a 6-man team of interviewers in residence in the villages 5 days before the survey. The interviewers registered the study population, interviewed persons concerning illnesses and environment, and generally promoted the survey through face-to-face contact with persons in all the selected households.

The interviewers were trained to recognize and report to their supervisor any potential nonparticipants—persons who showed little interest during registration, those whose activities conflicted with the time for

□ *The authors are working with the Danfa Comprehensive Rural Health and Family Planning Project in Ghana, a collaborative project of the University of Ghana Medical School, Ghana's Ministry of Health, and the University of California at Los Angeles School of Public Health. The project is supported by the U.S. Agency for International Development (USAID grant AID/CM/afr-IDA-73-14).*

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attending the clinic, or those who were physically disabled. The supervisor would then attempt to persuade these persons to attend the clinic. In the larger communities, influential persons who were not in the sample were invited to be guest participants at the clinic in order to gain their support for motivating people to attend.

After the initial day of the 2-day clinics held in each village, each interviewer revisited assigned persons who had not attended the first day to persuade them to come on the following day. The interviewers knew that followup visits were planned for nonparticipants.

We use the term "participants" to describe the 3,549 persons who voluntarily attended the clinic and received a complete medical examination. The term "nonparticipants" refers to the 196 persons who did not attend (5 of these attended but did not allow a complete examination).

The interviewer who had registered the nonparticipant accompanied the physician to this person's home. During the home visits, 104 (more than half) of the nonparticipants were interviewed and examined by the physician; an additional 8 persons were visited but not examined because of religious beliefs or outright refusal. Household members or neighbors were questioned about absent subjects. These home visits averaged about 2 hours in each village.

Data acquired during registration and from a morbidity questionnaire administered before the clinic started were analyzed for each nonparticipant.

Results

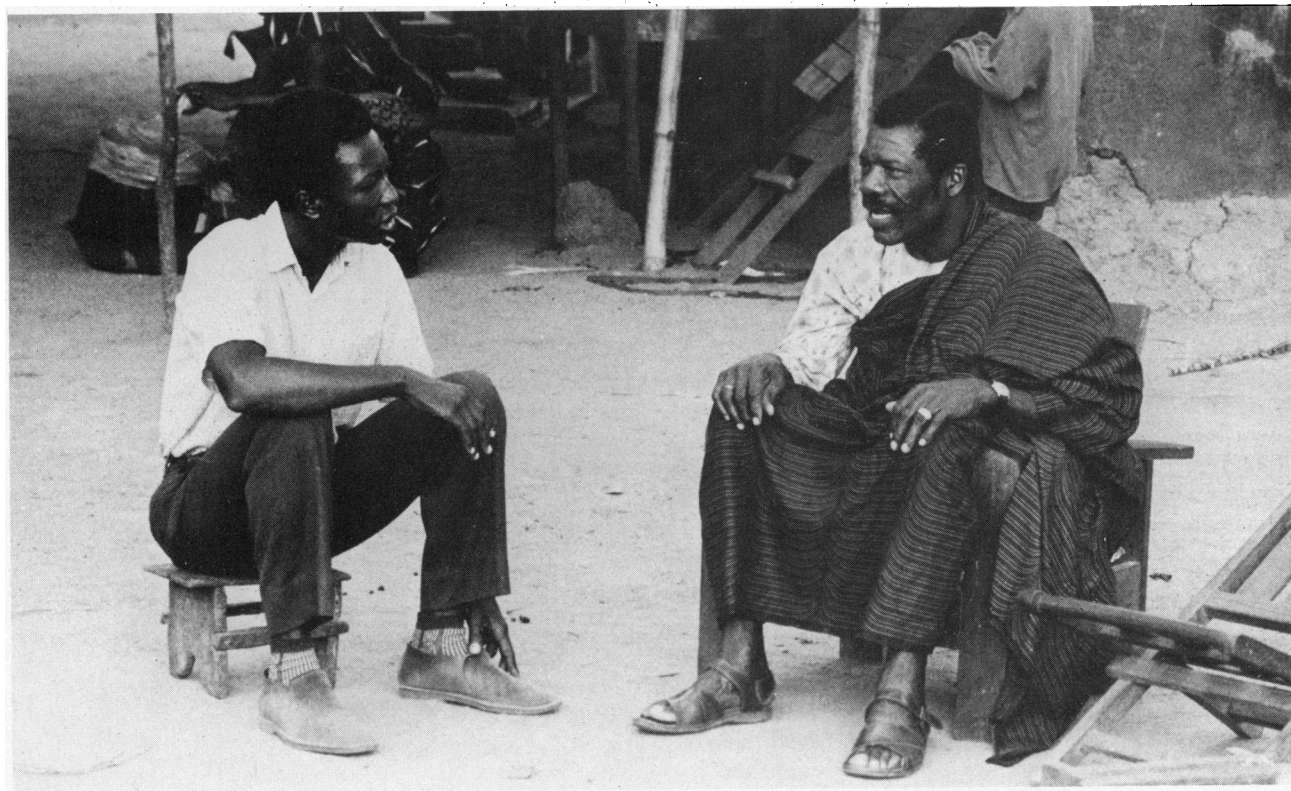
Nonparticipants were older and predominantly male. The median age for the health survey population was 17 years; the nonparticipant median age was 29 years. As shown in the following table, the highest response rates were achieved among persons under age 15; the percentages in the "examination rate" column are for the persons who attended the clinic and the nonparticipants seen at home:

Age group	Number	Response rate (percent)	Examination rate (percent)
0-4	625	97.1	98.7
5-14	1,213	98.5	99.4
15-44	1,259	92.2	95.4
45-64	438	93.4	97.0
65 and over	210	84.3	97.1
Total ...	3,745	94.8	97.5

Male nonparticipants exceeded female nonparticipants in every age group—the overall ratio was about 2 to 1. The major factor enhancing women's participation was that more women than men brought their children to the clinic. For the majority of male nonparticipants, work or travel were factors; some held salaried jobs with regular work hours which prevented them from attending morning clinic sessions.

Reasons for nonresponse. Following are the primary reasons given by the 196 nonparticipants for not attending the clinic:

Preliminary discussion about the proposed survey is held with the chief of Agbodzikope by a project interviewer



<i>Reason</i>	<i>Number</i>	<i>Percent</i>
Working (adults)	47	24.0
Incapacitated (three-fifths over age 65) .	37	18.9
Travel (adults)	18	9.2
Afraid (adults)	15	7.7
Refusal (adults)	10	5.0
Felt well (adults)	10	5.0
With parent (preschoolers)	11	5.6
At school (ages 6-19)	5	2.6
Sick relative (adults)	5	2.6
Funeral (adults)	5	2.6
Religion (2 households)	5	2.6
Herbalist's treatment (adults)	3	1.5
Intoxicated (adults)	2	1.0
Didn't know about survey (adults)	2	1.0
Sent home for stool specimen (adult) ..	1	0.5
Reason not known (two-thirds adults) ..	20	10.2

Work was the most frequent deterrent to participation. The survey was carried out from January to March, the dry season, to avoid nonresponse by farmers whose peak agricultural demands occur from May through October. Most of the persons who cited work as their reason for nonparticipation had non-farming occupations, including trading, road maintenance, truck driving, chop bars (food stalls), and communal labor. Although 61 percent of the adult nonparticipants were farmers—as were 60 percent of the sample—only 5 of the 47 at work missed the clinic because of farming activities.

During the off-season in rural Ghana, a great deal of traveling is done to visit relatives and home villages, meet social obligations, conduct business, and attend festivals. Festivals in the survey area are held in the second part of the year and did not affect participation. Travel, however, was a more common reason for nonparticipation than reported in a U.S. survey (3).

Reluctance to be examined was another significant reason for nonparticipation. Fear of examination, refusal to be examined, and a belief that the examination was unnecessary because the person was not ill may have been related factors. For example, fear of blood collection procedures may have influenced the 10 adults who decided that they felt well enough to forgo examination or that their children would not benefit from being tested. When visited at home, three of six persons who had refused examination at the clinic agreed to have it done at home; this assent suggests that at least part of their reluctance was related to the clinic itself.

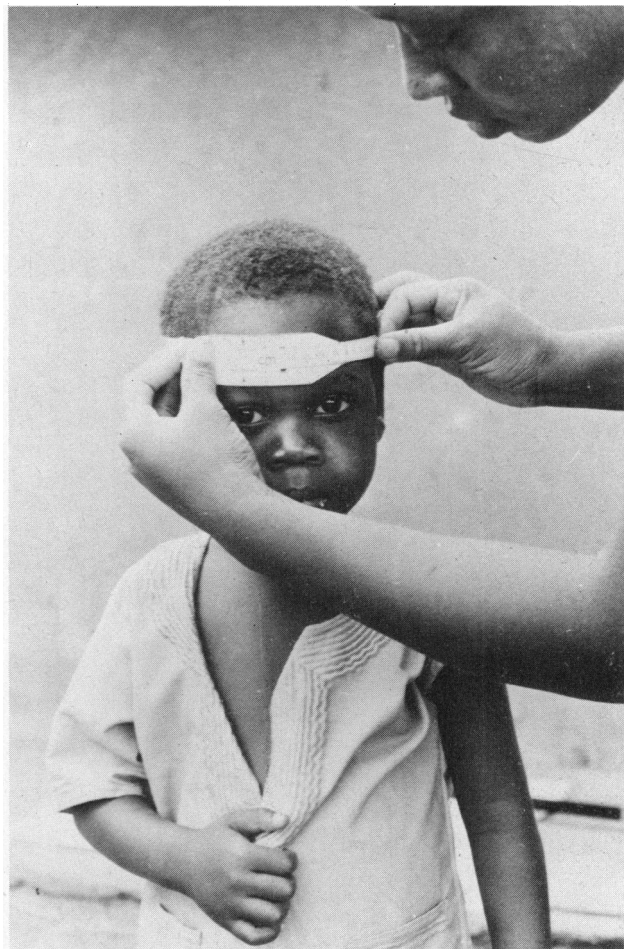
Almost every child who did not attend the clinic came from a household in which one or more additional members were also nonparticipants. In the households in which adults responded well to the survey, the children were always included. Letters authorizing student attendance from the Ministry of Education and advance contact with local school teachers enhanced participation by school children.

About one-fifth of the nonparticipation was due to disabilities that prevented people from coming to the clinic. This figure is about twice that for medical causes of nonresponse in a U.S. health survey (3), despite the fact that the village survey population was considerably younger. As expected, disability increased with age—two-thirds of the nonparticipants 65 or older were ill or suffered from impairments.

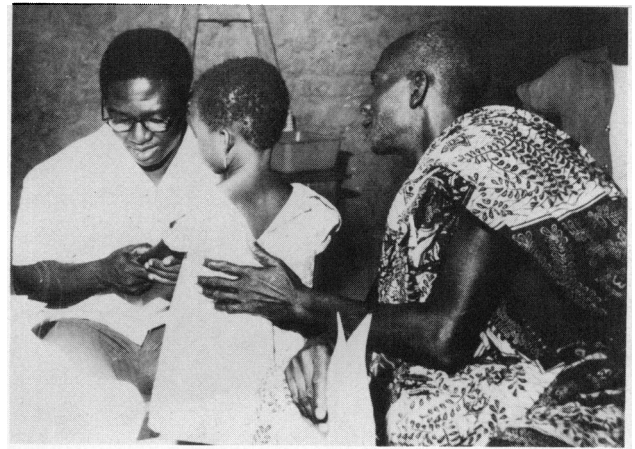
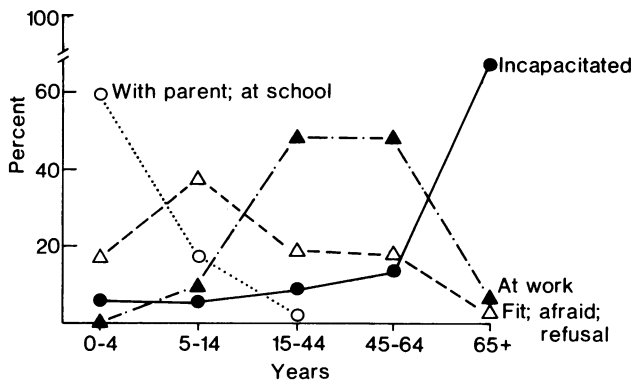
Other explanations for missing the clinic were given by 28 persons (14.3 percent), but the reasons for nonparticipation by 20 persons (10.2 percent) were unknown. Social obligations, such as caring for ill relatives or attending funerals, or religious-cultural beliefs that precluded use of modern medical services were the reasons for the nonparticipation of 16 adults and 2 preschool children. One elderly woman, who lived alone, had not heard of the survey, and an older man was uncertain of the examination dates.

Another way to interpret the reasons for nonresponse is to relate them to age groups. The age distribution for four major categories of nonresponse reasons is shown in the chart. Most of the children under age 15 were nonparticipants because their

Nutritional assessment of children was a major objective of the survey



Major nonresponse factors in a rural health examination survey, by age distribution of nonparticipants



Parents were enthusiastic about the survey—more than 98 percent of school-aged subjects participated

parents were not interested and did not bring them to the clinic. Two-thirds of the labor force age group who were nonparticipants cited as reasons their work, their travel, or their belief that the examination was not worth the time or cooperation required. As mentioned before, incapacitation affected two-thirds of the 65 and older nonparticipants.

Information on recent illnesses was obtained by a questionnaire interview; 50 percent of all the persons interviewed reported symptoms of illness. The percentages of nonparticipants who reported illness and the nonresponse reasons were as follows:

Reason	Number	Reported illness	
		Number	Percent
Felt well	10	1	10.0
Working	47	14	29.8
Travel	18	7	38.9
Afraid; refusal	25	10	40.0
With parents; at school ...	16	8	50.0
Miscellaneous	23	16	69.6
Incapacitated	37	34	91.9
Reason not known	20	10	50.0
Total	196	100	51.0

Almost twice as many nonparticipants lived in large villages—500 or more residents—as in small ones. The survey response according to village size was as follows ($X^2 = 22.4$, $df = 1$, $P = <.001$):

Size	Subjects	Participants	Nonparticipants	
			Number	Percent
Small	2,121	2,042	79	3.7
Large	1,624	1,507	117	7.2
Total ...	3,745	3,549	196	5.2

Several factors may account for this result. Larger villages have greater population mobility, better communication facilities, and easier access to regular health services. The drawing appeal of the survey examination was greater in more isolated and less-

sophisticated communities. Only three villages had 100 percent participation, and these were small. In the study villages located on all-season roads that led to a district hospital, the nonresponse rates were twice those for the more remote villages. The highest nonparticipation rate occurred in the only survey village that contained a health center.

Larger villages have more diversified occupation opportunities—three-fourths of the nonfarmer nonparticipants who cited work as their reason lived in large villages. The survey's timing during a nonfarming period had little impact in improving response from wage earners. Another factor that may have affected the survey turnout is the proportion of the community selected for the examination. Large villages were divided into 2 or more clusters averaging about 200 persons each, but only 1 cluster was included in the survey. In the small study villages, every resident was included and asked to support the survey.

Effect of home visits. It was hoped that followup examinations of nonparticipants would improve the survey's coverage of persons in age groups having higher nonresponse rates. More important, potential bias because of unknown morbidity rates among nonparticipants would be corrected. Although the survey's nonresponse rate was low, it was essential to achieve maximum examination rates in the first of three surveys to be conducted in the same villages over a 5-year period.

Followup visits increased the overall examination rate from 94.8 percent to 97.5 percent, as shown earlier. The major improvement was the rise in the adult examination rate from about 92 percent to 96 percent, particularly a 13 percent increase in coverage of persons age 65 and over.

Examinations during home visits were carried out for 53 percent of the nonparticipants. The prevalence rates for selected diseases or conditions among the 94.8

Effect of examination of nonparticipants on prevalence of selected conditions

Conditions	Participants		Total examined		
	Number of cases	Prevalence (per 100,000)	Number of cases	Prevalence (per 100,000)	
				Maximum ¹	Minimum ²
Leprosy	7	197	8	219	214
Guinea worm	6	169	8	219	214
Tuberculosis	2	56	3	82	80
Pollomyelitis	10	282	11	301	294
Inguinal hernia	61	1,719	65	1,779	1,736
Paralysis	5	141	8	219	214
Blindness	7	197	15	411	401
Malignancy	3	85	6	164	160
Cardiac failure	0	1	27	27
Psychosis	0	3	82	80

¹ Rate calculated for 3,653 persons examined. ² Minimal prevalence rate for 3,745 persons eligible.

percent who attended the clinic as compared with the total 97.5 percent examined after the home visits are shown in the table. Diagnoses made during home visits significantly increased the prevalence rates for active tuberculosis, paralysis, blindness, malignancy, cardiac failure, and psychosis. The last two conditions were detected only in nonparticipants. Sufficient information on more common conditions, particularly childhood diseases or acute infections, was obtained during the clinic examinations. The contribution of home visits to morbidity information, therefore, was to clarify the frequency of severe forms of diseases (for example, pyoderma, eye infections, and leprosy). The home examinations also provided valuable information about the health needs of older persons and about certain diseases, such as mental illness, for which traditional therapy has been held in greater esteem than modern techniques.

Conclusions

The response rate of 94.8 percent was higher than that usually achieved in voluntary health examination surveys (4). Part of the survey's success was attributed to pretesting, which made the examination procedures more acceptable. However, careful preliminary contact with persons in the study communities and individualized persuasion by highly motivated interviewers were even more important. Lack of knowledge about the survey, a problem that has seriously affected response in other surveys (5), was almost nonexistent.

Children and women responded particularly well to the survey—men had higher nonresponse rates. Because the Danfa Project's major activity is research in maternal and child health, the additional information on morbidity gained during home visits contributed relatively little to current programs.

The reasons given for nonparticipation did not provide any unexpected results, although it is valuable to know that most adult nonparticipants cited work,

travel, or a lack of interest in being examined. Persons with disabling conditions were readily identified during household registration; therefore, home visits to examine incapacitated persons could be fitted into a routine examination schedule with relatively little effort.

This study of nonresponse factors revealed that factors associated with adult male nonparticipation included residence in larger villages, salaried nonfarming occupations, and a below-average number of recent illnesses as indicated by the responses to the morbidity questionnaire. These factors will be used as indicators of potential nonparticipation, and special efforts will be made in the next survey to identify and motivate such persons to participate.

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