

# HEALTH SURVEY ON THE ILHA DA CONCEIÇÃO, ESTADO DO RIO

## 1. Study Design and Report of Selected Demographic and Environmental Characteristics

J. E. Mules, J. R. Coura, J. Menezes and G. Entwisle

*During July and August of 1968, a health survey was conducted on the Ilha da Conceição, an area of Niterói containing approximately one thousand households. The survey was conducted by students from the Universidade Federal Fluminense and the University of Maryland, and was under the supervision of faculty of the Department of Tropical Medicine at U.F.F. and from the Department of Preventive Medicine at the University of Maryland, Baltimore, Maryland, U.S.A.*

*The survey was focused on a 25 percent random sample of the households on the island. Information was obtained from a responsible adult at each household for completion of a health questionnaire. Physical measurements, as well as laboratory study information were obtained from all children in these households. A number of environmental sanitation problems were identified on the Ilha da Conceição. In addition, the survey indicated that approximately half the children had not been adequately immunized against diphtheria, pertussis and typhoid. Preventable communicable diseases were the major cause of reported deaths which had occurred in infants or household members.*

*The health of the population on the Ilha da Conceição could well be enhanced by the development of an intelligence system indicating the immunization status of all children in the area. In addition a health education program for the residents could well be beneficial for improvement of sanitary conditions on the island, as well as maternity and well baby care.*

Under the auspices of the Partners of the Alliance Program, an exchange program was developed between the University of Maryland School of Medicine (Baltimore, Maryland, U.S.A.) and the Faculdade de Medicina da Universidade Federal Fluminense (Niterói, Estado do Rio, Brazil). Within the framework of this exchange program, a team of three medical students and a faculty supervisor from the University of Maryland joined with stud-

ents and faculty of the Universidade Federal Fluminense to conduct a health survey in a defined area of Niterói. It is the purpose of this report to review the developments of this exchange program, comment on the design of the study, and present some preliminary results of the survey.

The state of Maryland and the Estado do Rio de Janeiro are paired as sister states under the Partners of the Alliance

Program. The two states are similar in size and total population. Each has a state university with schools of medicine, dentistry, social work, and nursing. Communications were begun between faculty of the two universities and concerned the development of a professional and technical exchange. A feasible first step was considered to be one where three medical students and a faculty member, from the Department of Preventive Medicine at the University of Maryland School of Medicine, would spend the months of July and August of 1968 in Niterói and participate in a health survey in that city. The Maryland medical students and faculty would join medical students and faculty of the Department of Tropical Medicine at the Faculdade de Medicina (U.F.F.), with this department supervising the field project. To minimize transportation problems, a well-defined area in Niterói, the Ilha da Conceição, was selected for the survey. This island is connected to the mainland by a narrow road and had a population estimated to be 5,000.

## STUDY DESIGN

The field study in 1968 was developed to provide information from:

### 1. *The administration of the household health questionnaire:*

This questionnaire was prepared to obtain information on the household composition, pregnancy history of the women, history of selected diseases, sanitary conditions of the household, and utilization of various medical facilities.

### 2. *Physical measurement and selected laboratory studies on children:*

The height, weight and skinfold thickness was determined for all children in selected households. In addition, blood was obtained for hemoglobin determination and stool specimen for identification of parasites. The results of this study are reported separately.<sup>(2)</sup>

## METHOD

It had been estimated that there were 1,000 dwellings on the island and the questionnaire was administered to a 25 percent sample of these households. The topography of the island lent itself to a natural division into three areas and three student teams were formed, one for each area. A team consisted of two medical students (one from each university), a social work student, and a nursing student. An available map of the island was enlarged and divided into the three designated sections, one for each of the student teams.

The student teams first surveyed their designated areas, marking the location of each identified dwelling. When this preliminary survey was complete, households were selected for inclusion in the sample by identifying every fourth dwelling along the roads of each of the three areas. The preliminary survey confirmed the estimated number of dwellings and the 25 percent sample identified 250 households for inclusion in the survey.

Prior to the health survey, a publicity campaign was conducted on the island to inform the residents about the field study. This campaign included announcements made to groups of residents and meetings with prominent members of the community.

Each of the three student teams was responsible for completion of the questionnaire at the selected households in one area. At each household a responsible adult provided information for one of the students while other team members were responsible for obtaining physical measurement data on the children and obtaining blood for hemoglobin determination. If children were not at home at the time of the initial interview, the household was revisited in an attempt to get complete physical measurement and laboratory data on the children.

## RESULTS

Information for the questionnaires was obtained from 236 of the 250 households, a response rate of 94 percent. Of the 14 households where no information was obtained, only one refused to participate in the study; 4 households were inhabited by bachelors who were away from the island

most of the time and could not be located during the survey; 2 families moved from their houses during the time of the survey; one household contained two elderly, deaf people who were unable to respond to the questionnaire; and 6 other households could not be interviewed because the occupants were never at home during the survey period despite repeated calls at these households. The design of the study did not include plans for substitution of other households for the 14 in the non-respondent group.

The residents of 236 households constituted the study population, a total of 1,217 individuals. The age distribution of this population is given in Table 1. The proportion of the study population in the age groups under 20, 20-44, 45-64, and 65 and older, is almost identical to that reported for all of Brazil in 1964.<sup>(1)</sup>

The number and proportion of the study population living in households of varying size is indicated in Table II. Although the average number of residents per household was five, 712 people, or 58 percent of the population, lived in households containing six to 17 people. Some households were composed of several adults only and some of one parent only (usually the mother) alone with one or two children, and of these only 23, or 9.8 percent, were common-law marriages. All but 22 households had at least one member employed, and of these 22, eight were temporarily unemployed, 9 were retired, and 5 were not working for reasons of health.

Environmental characteristics of the households are listed in Table III. Most of

the dwellings were of plaster or brick construction, with only a few woden shacks or adobe-like dwellings. The economic level of the houses of the island showed wide variation, with some very attractive large houses. One dwelling, not included in this survey, reportedly had its own swimming pool. The majority of the households were of a middle economic level. The residents of 66 percent of the households had lived there longer than five years and 57 percent of the household were owner occupied.

A piped water supply was available to the island from the city of Niterói. This water supply was piped directly to the house in 58 percent of cases and was piped to the lot in 20 percent of cases. Thirteen percent of households had to obtain their water from a community spigot placed at various locations around the island. The island lacked a sewage disposal system but most families had septic tanks or cesspools of one type or another.

The general conditions of many parts of the island were extremely poor with clogged drainage ditches, unpaved roads filled with mud during the rain, and garbage strewn over the area. The widespread lack of facilities for garbage disposal favored the scavenging habits of the many goats and pigs which were found on the island.

Historical information was also collected on infectious disease occurrence in household members. The results are listed in Table IV. Measles and pertussis were commonly reported in children and older individuals. Nine percent of the household residents had had an episode of

Table I

## AGE AND SEX DISTRIBUTION OF SURVEY POPULATION

Age	Females	Males	Totals	Percent
0-19	285	357	642	52.9
20-44	201	212	413	33.9
45-64	61	79	135	11.1
65 and greater	14	13	27	2.1
TOTALS	561	656	1,217	100.0

diarrhea within two weeks; and illness reported three times more often in children than in older household members. Twenty cases of typhoid and 17 cases of diphtheria were reported, and almost all these cases had occurred during the childhood of interviewed adults. Fewer cases of hepatitis and tetanus were reported in the children but similar numbers of cases of poliomyelitis and tuberculosis were reported for both age groups.

The history of outcome of prior pregnancy was obtained from 236 women over the age of 15 (Table V). Sixty-nine women reported a total of 159 natural abortions and 12 women reported a total of 43 provoked abortions. There was a total of 32 stillbirths among 20 women and an additional 49 women delivered 90 liveborn children who subsequently died. Information on the date of births of those liveborn who died was not obtained in the survey. If one assumes that the children included in this study are identified with a female population under age 45, then in this group of 175 women there were 46 liveborn children who subsequently died. If these are included with the total of living children in the population sample, then of the 584 children liveborn 46, or 79 percent, died in infancy or childhood.

Of the 90 children who subsequently died, 57 died in the first year of life, and 22 of these in the first four weeks of life (Table VI). As can be seen from

the Table, infectious diseases were the primary cause of death in both groups of infants.

The utilization of various health facilities by household members, in the 12 months prior to the survey, is summarized in Table VII. Almost one-third of the households had had one or more members hospitalized during the previous year, accounting for 96 hospitalizations. Fifteen percent of the hospitalizations were related to pregnancy or delivery and an additional 40 percent were related to some surgical procedure of which the largest single category was tonsillectomy. Occupants of half the households had visited the Island clinic and the hospital clinic within the past twelve months, making more than 500 visits to these two clinics. A total of 183 visits were made to private physicians and an additional 77 visits to the health department clinic.

Visits were made by household members to the various clinics and to private physicians for a variety of reasons. Of the total of 800 visits to the private physician and clinics, 356, or 44.5 percent, were made for vaccination of the children, because of worms, gastroenteritis and dehydration in children and well baby and preventive medicine purposes (Table VIII).

#### DISCUSSION

The survey identified a number of health problems and their solution will

Table II

#### POPULATION DISTRIBUTION BY HOUSEHOLD

Nº of People in Household	Nº of Households of this size	Proportion of Households of this size	Nº of Residents in these Households	Proportion of Study Population
1	14	5.9	14	1.2%
2	19	8.1	38	3.1
3	27	11.4	71	5.8
4	44	18.6	176	14.5
5	41	17.4	205	16.8
6	39	16.5	234	19.2
7+	52	22.1	478	39.3
Total	236	100.0	1,217	99.9

Table III

## LIVING ACCOMODATIONS &amp; ENVIRONMENTAL CONDITIONS

	Nº	%
<i>Type of Dwelling</i>		
Plastered & Brick	206	87.3
Stucco	17	7.2
Wooden Shack	9	3.8
Other	4	1.7
<b>Total</b>	<b>236</b>	<b>100.0</b>
<i>Water Source</i>		
Piped to House	131	55.6
Piped to Lot	47	20.0
Well	27	11.4
Community Spigot	30	12.7
Bought	1	.3
<b>Total</b>	<b>236</b>	<b>100.0</b>
<i>Toilet Facilities</i>		
Inside	173	73.3
Outside	55	23.3
None available	8	3.4
<b>Total</b>	<b>236</b>	<b>100.0</b>
<i>Type of Sewage Disposal</i>		
"Fossa Sêca"	77	32.6
"Fossa Assêptica"	83	35.1
"Fossa Negra"	38	16.1
Drainage to Sea	17	7.2
DK/Other	21	9.0
<b>Total</b>	<b>236</b>	<b>100.0</b>
<i>Garbage</i>		
Buried	7	2.9
Burned	78	33.1
Abandoned	149	63.1
Unknown	2	0.9
<b>Total</b>	<b>236</b>	<b>100.0</b>
<i>Source of Light</i>		
Electricity	221	93.6
Kerosene	12	5.0
Other/DK	3	1.4
<b>Total</b>	<b>236</b>	<b>100.0</b>

Table V

## OUTCOME OF PREGNANCY, SELECTED COMPLICATIONS, AND CHILDHOOD MORTALITY

AGE	Nº of Females	Nº of Respondents	Natural Abortions		Provoked Abortions		Stillbirths		Liveborn who Subsequently Died	
			Nº of Women	Nº of Abortions	Nº of Women	Nº of Abortions	Nº of Women	Nº of Stillbirths	Nº of Women	Nº of Children
15-24	101	36	6	11	3	6	—	—	3	9
25-34	87	78	22	43	3	6	5	7	4	7
35-44	64	61	22	48	3	19	9	17	20	30
45 +	75	61	19	57	3	12	6	8	22	44
Total	327	236	69	159	12	43	20	32	49	90

\* Most of the young women aged 15 to 19 who were not married and were living at home were not asked for pregnancy histories. Other women households residents, such as sisters and aunts, who were no the head of a household, were also not questioned about pregnancy history.

Table VI

## INFANT MORTALITY REPORTED BY INTERVIEWED WOMEN

Causes of Neonatal Mortality Age of Child at death, 1 month	
Nº	Cause
6	Neonatal Tetanus
5	Unknown
3	Measles
8	(1 each: pneumonia, dysentery, hemorrhage, hypoglycemia, cardiopathy, blood, neglect, weak, icterus)
Total 22	

  

Causes of Infant Mortality Age at death, 1 month — 12 months	
Nº	Cause
12	Dehydration
5	Unknown
3	Dysentery
15	(Mainly infectious diseases as measles, whooping cough, tetanus, pneumonia, etc.)
Total 35	

Table VII

UTILIZATION OF HEALTH FACILITIES BY STUDY POPULATION  
IN THE TWELVE MONTHS PRIOR TO SURVEY

Facilities	Nº and % of households with one or more visits		Total Nº of visits to facility
	Nº	%	
Hospitalizations	77	32.7	96
Island Clinic	124	52.5	302
Hospital Clinic	118	49.2	238
Private Physician	96	40.7	183
Niterói Health Clinic	44	18.6	77
Total			896

Table VIII

## PRIVATE PHYSICIAN AND CLINIC VISITS FOR SELECTED REASONS

Reason for Visit	Private M.D.	Niterói Health Clinic	Hospital Clinic	Island Clinic	Total
Vaccinations		37		128	165
Worms	5	4	5	23	37
Gastroenteritis	17	2	19	17	55
Dehydration	4		5		9
Well baby and Preventive Medicine	11	41	29	9	90
TOTAL	37	84	58	177	356

three diseases was practically complete. Accordingly, the vaccination program in July of 1968 was focused on the few children known to be unvaccinated against these diseases, as well as vaccination against tetanus for many adult residents, particularly those individuals working in the shipyards. Later in August, it became apparent that the information provided earlier was not correct since the household survey indicated that a significant proportion of the children had not been immunized against diphtheria, pertussis and typhoid<sup>(2)</sup>

The discrepancy between the reported vaccination status of the children for the survey and the results found as a result of the household survey point up the need for an improved health intelligence system on the island. Such a system could include household health records kept in the island clinic, as well as an immunization card for each child, kept by the parents. Individual immunization cards could be kept current and would be useful for surveillance of immunization needs of the children. Review of these records might become a routine part of the public school admission procedures.

#### Health Education

Mention was made earlier of the value

of an educational program to improve sanitary conditions. This education program could be expanded into a health program for island residents. The reported causes of infant mortality would suggest the need for improvement in the well baby care program of infants which would be an integral part of a health education program emanating from the island clinic. The frequency of recent visits to physicians and clinics for worms, gastroenteritis, and dehydration, as well as other data obtained on the children<sup>(2)</sup> further point up the need for a health education program focused on infants and children as well as expectant mothers.

During the year preceding the survey, the island residents had used four different resources for care (The Niterói health clinic, hospital clinics, or private physicians all located in Niterói, or the island clinic) and almost half the total visits had been made to the island clinic. The efficiency of care rendered to the island population might be enhanced if there were developed, at the island clinic, a centralized household or family health record which would include information about patient visits to the hospital clinic, health unit, or private physician.



## RESUMO

Durante os meses de julho e agosto de 1968, foi realizado um inquérito na Ilha da Conceição, uma área de Niterói com aproximadamente mil casas. O inquérito foi conduzido por estudantes da Universidade Federal Fluminense e da Universidade de Maryland, e supervisionado pela Clínica de Doenças Infecciosas e Parasitárias da U.F.F. e pelo Departamento de Medicina Preventiva da Universidade de Maryland, Baltimore, Maryland, U.S.A.

O inquérito foi realizado em 25% de amostras casuais dos domicílios da ilha. As informações foram obtidas de um adulto responsável em cada domicílio para a execução de um questionário de saúde. Exame físico e estudos laboratoriais foram realizados em todas as crianças nesses domicílios. Muitos problemas de saneamento de ambiente foram assinalados na Ilha da Conceição. Em acréscimo, o inquérito indicou que aproximadamente a metade das crianças não tinha sido imunizada adequadamente contra a difteria, coqueluche e febre tifóide. Doenças transmissíveis que seriam evitáveis foram a principal causa de óbitos que ocorreram em crianças de uma mesma família.

A saúde da população da Ilha da Conceição poderá ser melhorada mediante o desenvolvimento de um sistema de informação indicando o "status" de imunização de todas as crianças na área. Além disso, um programa de educação sanitária para os moradores seria muito benéfico para o melhoramento das condições sanitárias na Ilha, assim como cuidados adequados à maternidade e à infância.

## REFERENCES

- 1 — CAMPBELL, E.P. — Health and Development — Brazil. Mimeographed: Sept. 1967.
- 2 — MUIJES, J.E., COURA, J.R., ENTWIS-LE, G., and MENEZES, J. — A health survey of Ilha da Conceição, Estado do Rio. II. Selected health characteristics of children. Rev. Soc. Bras. Med. Trop. 5: 391-400, 1970.