

## A Sample Survey of Selected Areas In and Near Little Rock, Arkansas, to Assess the Prevalence of *Entamoeba histolytica*

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*Laboratory confirmed clinical amoebiasis was diagnosed among more than 50 persons by the University of Arkansas Medical Center from 1965 to 1961. The presence of this number of patients prompted an investigation into the prevalence of Entamoeba histolytica in four selected areas in and around Little Rock, Arkansas. The results of the study, using a sample survey technique, showed that it is possible to have a seemingly large number of clinically significant cases of amoebiasis in a population without a high prevalence of the parasite. Evidence was also obtained of the beneficial effects of improvements in sanitary facilities, as reflected in the lower amoebic prevalence rate in a 0-4-year age-group from one of the four areas surveyed in which a piped, indoor city-water supply and sewage facilities had been installed six years previously.*

During the years 1956 to 1961, Dr Kerrison Juniper of the University of Arkansas Medical Center diagnosed, from clinical and laboratory evidence, over 50 cases of amoebic colitis with seven deaths. In addition, he diagnosed four cases of amoebic liver abscess and three cases of cutaneous amoebiasis. At the time of the present survey, parasitologists of the Communicable Disease Center, Atlanta, Ga., had confirmed the presence of *Entamoeba histolytica* in stained faecal smears, proctoscopic aspirates or biopsy and autopsy materials from 55 patients in his series (Juniper, 1962). In view of the accumulation of clinically significant cases, the Arkansas State Health Department requested assistance from the Communicable Disease Center (CDC) in determining the prevalence of *E. histolytica* in the State.

The colitis cases reported by Dr Juniper to the

State Health Department resided in 29 locations scattered throughout the State, although the greatest concentration was in and around the city of Little Rock. The geographical distribution of these cases paralleled rather closely the distribution of the general patients coming to the University of Arkansas and Veterans Administration Hospital in Little Rock. Aside from 13 cases among patients at the Arkansas State Mental Hospital (across the street from the University Hospital), there was no concentration of cases in any institution or factory. Within the Little Rock area, seven patients were located in the Scott Area and three in the College Station Area. Both of these "post office areas" are constituted by relatively low socio-economic segments of the population.

Owing to limited facilities and time a general parasitological survey of the State was not feasible. In consultation with professional staffs of the State, Pulaski County, and Little Rock City health departments, it was decided to conduct sample surveys in four areas in and around Little Rock, including Scott and College Station, where known cases had resided. In selecting the four areas, an attempt was made to have each area represent relatively distinct environmental, ethnic and sanitary conditions.

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## MATERIALS AND METHODS

*Areas selected for surveys*

The four areas selected for the sample surveys are indicated on the accompanying map. All of the areas were in Pulaski County, one being just within the city limits of Little Rock. As stated above, they were selected to represent relatively distinct areas, well separated from one another. The following descriptions outline the major characteristics of the areas:

*West 12th Street area :*

*Principal characteristics :* Suburban area with scattered houses, inside plumbing connected to private wells and septic tanks. White residents.

This area comprises the northern portion of the so-called " West 12th Street Area of Little Rock ", although it is located outside the city limits. The portion involved in this survey is located  $7\frac{1}{2}$  miles (12 km) approximately due west of the centre of the city, near the intersection of Rodney Parham Road and Henson Road. The houses in the area are single-unit, frame dwellings, ranging in size from

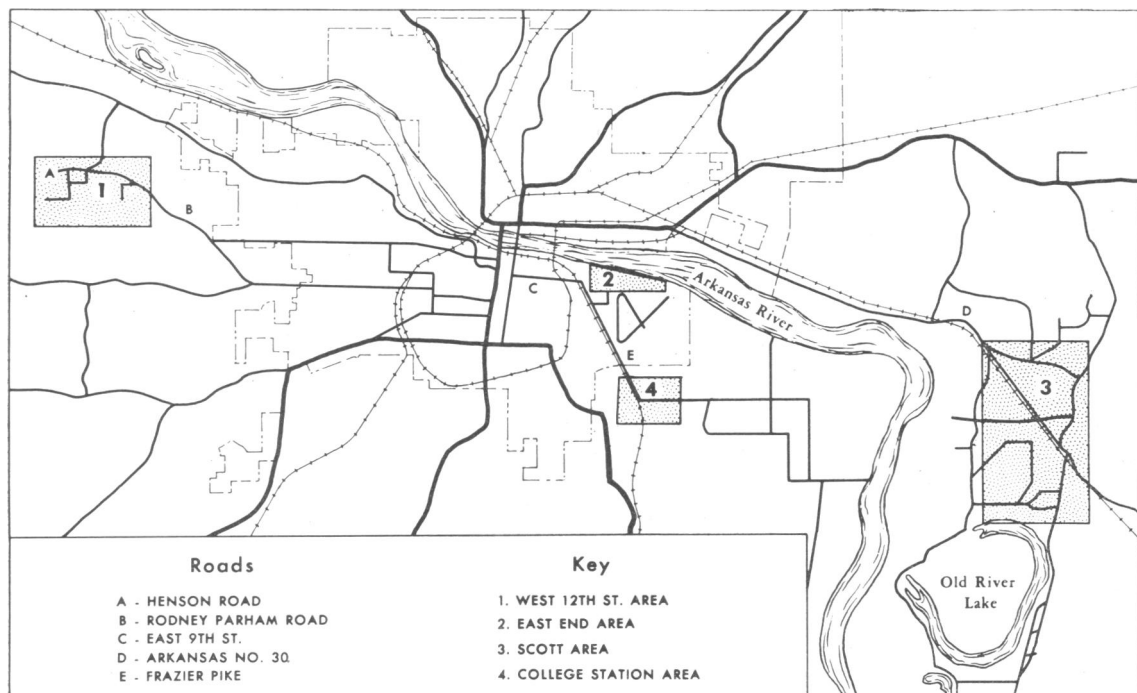
small one- to three-room dwellings to a few larger types consisting of seven or eight rooms. The major road through the area (Rodney Parham) is asphalt with the side roads of dirt or improved hard bed gravel. The population is made up entirely of white persons. The majority of the wage-earners are unskilled with some semi-skilled and relatively few skilled. Practically all of the houses in the area are supplied with water from private wells, which is pumped into the house. A few families, however, transport their drinking water from the city of Little Rock. Most of the houses are supplied with inside flush toilets and septic tanks, but a limited number use outside pit privies.

*East End area (Little Rock) :*

*Principal characteristics :* Urban area with housing developments or houses crowded together, small lots, city water and sewage system. Predominantly Negro residents.

This area is located approximately  $2\frac{1}{2}$  miles (4 km) south-east of the centre of Little Rock and is bordered on the north by the Arkansas River, on the south by the Municipal Airport, on the west by

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Townson Street and on the east by River Street. The principal streets within the area are East 9th Street and 10th Street, both paved. Most of the streets in the area are either paved or improved hard bed gravel in poor repair. The dwellings range from small shacks to relatively good frame houses of five or six rooms and a large 250-unit brick housing development. The wage-earners are mainly unskilled labourers, semi-skilled factory workers and some foremen. The entire area is supplied with inside, piped city water, flush toilets and sewage system.

*Scott area :*

*Principal characteristics :* Rural area with scattered tenant houses, pitcher pump wells, surface privies. Predominantly Negro residents.

This strictly rural area is located approximately 16 miles (26 km) south-east of the centre of Little Rock out on Arkansas Route 30, just north of Old River Lake. The houses, consisting primarily of two- or three-room frame buildings, are well separated on the roads among the cultivated fields. Generally, each home has its private pitcher-pump well and outside surface privy. The largest population group is the Negro field workers, with a few white farm owners and managers. The main road (State Highway 161) is paved with asphalt while the side roads are of gravel or clay.

*College Station area :*

*Principal characteristics :* Semi-urban slum with crowded, dilapidated shacks, mixture of public and private water, outside surface privies. Predominantly Negro residents.

This semi-urban slum area is located approximately 4 miles (6 km) south-east of the centre of Little Rock, east of the Frasier Pike, and south of the municipal airport. With the exception of the main road, most of the streets are of dirt or clay and in poor repair. The inhabitants of the community are predominantly Negro and are primarily unemployed or unskilled labourers (many of the women serve as domestic help in Little Rock). The houses consist primarily of dilapidated shacks built closely together with little or no orderly arrangement on the roads. The municipal water supply of Little Rock is available to houses located on the main road by means of water taps outside the houses. Households away from the main street obtain their water from a neighbour's faucet or from various wells and occasionally from springs. Some of the families

transport their drinking water from their place of work in the city. A number of the families have their own private well, while others use common wells. All the households in this area utilize outside surface privies, many of which are in poor repair.

*Selection of households to be surveyed*

With the facilities available, it was decided that 350-400 stool specimens could be examined during the allotted time. Although the family sizes in the area were not known, it was estimated that approximately 25 households in each of the four areas would give the desired number of specimens. Prior to the survey, the areas were visited to ascertain the methods of selecting the households to be included in the study. Sampling schemes were chosen such that within a given area each dwelling unit would have an equal probability of being chosen in the sample.

The Scott and West 12th Street Areas had a small enough number of dwelling units to enable each house to be noted on the area map. The houses were then counted and numbered, and 25 were selected for the sample in each area from a table of random numbers. The East End and College Station areas had population concentrations too dense for the dwelling units to be accurately counted and chosen for interview in this way. Instead, a modification of a method was used which had been successfully employed in other surveys (Serfling et al., 1960). Within each area 25 sample points were located randomly on maps of the entire areas according to the system described by Serfling and his co-workers. The street segments closest to these points were included in the study. A segment was defined as both sides of the street between two other streets. For example, the segment "X Street between A and B Streets" would consist of the dwelling units on both sides of X Street between A and B Streets. Upon going to a street segment during the survey, the houses were counted and one was selected for interview by the use of a table of random numbers.

*Family interviews and collection of specimens*

Each of the authors from the Communicable Disease Center was assigned the responsibility of collecting specimens in a given area and was assisted by a city or county health department nurse familiar with the particular area. On the initial visit to the selected houses, the purpose of the survey was explained to an adult member of the family whose co-operation was solicited. The survey was explained

simply as being a study to determine some of the causes for diarrhoea in the area. As a result of the excellent rapport between the public health nurses and the people of the areas, there were very few outright refusals to co-operate.

During the interview, identifying information was obtained (name, age, sex, relationship) on each household member and inquiries were made concerning the gastro-intestinal complaints of each. Information was also obtained on the length of residence in the area, occupation, ethnic group, water supply and sanitary facilities. A ½-pint waxed cardboard carton was left for each member of the family with instructions that the collected stool specimens would be picked up the following morning. In order to obtain as fresh a specimen as possible, it was emphasized that the morning specimen was preferred.

During the second visit, a portion of each collected specimen was preserved in PVA fixative (Brooke & Goldman, 1949), and the remaining portion placed in an insulated hamper, cooled with dry ice. If all members did not contribute specimens, they were asked to have specimens available the following morning.

If no one was found at home in a selected household on the first day of interviews, the house was visited the second day. If no one was contacted the second day, an alternative house was selected, the interview conducted and instructions left that the specimens would be collected the following day. No interviews were conducted on the third day and no collections were made after the third day. In instances where households were not interviewed it was because of inability to contact an adult member of the family during the period of the survey.

#### *Laboratory examinations*

Laboratory examinations were performed in the facilities of the medical research building of the University of Arkansas Medical Center. There was ample space for various laboratory operations, permitting several persons to work at the same time.

Prior to the survey, a two-day Workshop on the Laboratory Diagnosis of Intestinal Parasites was presented by the two parasitologists from the Communicable Disease Center (M.M.B. and G.R.H.), under the sponsorship of the University of Arkansas Medical Center, the Arkansas State Public Health Laboratory and the Little Rock Society of Medical Technologists. Fifty-five technicians, pathologists and laboratory directors from various parts of the

State received 16 hours of instruction and practice. In order to afford additional experience, a number of the local technicians were given the opportunity to participate in the laboratory work connected with the survey. From one to four individuals were available to assist, mainly with the technical procedures, during most of the 16 days required to examine the specimens. All of the parasite identifications were confirmed by the parasitologists from the Communicable Disease Center.

The majority of faecal specimens were preserved in 10 % formalin after a day or more in the refrigerator. The formalin-ether concentration technique (Ritchie, 1948) was performed on the specimens preserved in formalin. There was another group of 35 specimens, mainly from Scott Area, on which the concentration technique could not be performed as their quantities were not sufficient; direct smears (saline and iodine mounts) were examined from these. All of the specimens preserved in PVA fixative were stained by the trichrome method of Wheatley (1951).

The direct wet mounts and the concentrates were examined for a minimum of 15 minutes each. All of the slides were coded in such a manner that the microscopist did not know from which area the specimen came. Trichrome-stained PVA films were examined of those specimens which were positive or questionably positive by the other procedures as well as those that were soft in consistency.

## RESULTS

### *Ethnic group and sanitary facilities of families*

Within three days 93 families were interviewed, which was sufficient to provide the required number of specimens for examination. During the interviews, information was obtained concerning the water source, toilet facilities, and evidence of diarrhoea (Tables 1 and 4). It should be noted that the data on the selected families in general confirm the characteristic of the areas as outlined in "Materials and Methods" above.

### *Socio-economic status of families interviewed*

The four areas were preselected to include families of relatively the same socio-economic level. As a check on such similarity, at the time of interview information was obtained on the occupation of the wage-earner. The families were then placed in certain socio-economic levels (Table 2) according to the technique of Hollingshead & Redlich (1958)

TABLE 1  
ETHNIC GROUP AND SANITARY FACILITIES OF FAMILIES INTERVIEWED

Area	Total families interviewed	Ethnic group of families		Water source		Toilet facilities	
		White	Negro	City	Well	Inside flush	Outside privy
West 12th Street	24	24	0	3 <sup>a</sup>	21	21 <sup>b</sup>	3
East End	25	8	17	25 <sup>c</sup>	0	25 <sup>d</sup>	0
Scott	21	4	17	1 <sup>a</sup>	20	3 <sup>b</sup>	18
College Station	23	2	21	12 <sup>e</sup>	11	0	23
Total	93	38	55	41	52	49	44

<sup>a</sup> Hauled from city.

<sup>b</sup> Septic tanks.

<sup>c</sup> All inside taps.

<sup>d</sup> City sewage.

<sup>e</sup> 6 with outside taps.

TABLE 2  
SOCIO-ECONOMIC STATUS OF FAMILIES INTERVIEWED

Area	No. with occupation recorded	Socio-economic status according to occupation of wage-earner <sup>a</sup>					Percentage in lower status
		Number in medium status <sup>b</sup>			Number in lower status		
		Code 3	Code 4	Code 5	Code 6	Code 7	
West 12th Street	18	0	3	9	2	4	33
East End	24	1	2	3	6	12	75
Scott	19	0	3	0	0	16	84
College Station	21	0	0	3	6	12	86
Total	82	1	8	15	14	44	71

<sup>a</sup> Based on Hollingshead & Redlich, 1958.

<sup>b</sup> No individuals in higher status.

although if the Hollingshead-Redlich scale is strictly adhered to the socio-economic level is determined on the basis of education as well as occupation.

Using the modified technique, it was found that 33% of the families in West 12th Street, 75% of those in East End, 84% of those in Scott and 86% of those in College Station fell within the two lowest of seven categories set up by Hollingshead & Redlich. These two levels include the semi-skilled and unskilled and unemployed wage-earners. Although the percentage of wage-earners in the two lowest levels was significantly less in West 12th Street (33%) than in the other three areas (75%-

86%) and in spite of the small number of families upon which information was obtained and the fact that occupation alone was used as a criterion rather than occupation and education, the families were considered to be relatively homogeneous in socio-economic level.

*Parasitological findings*

A total of 357 faecal specimens suitable for laboratory examination was collected. This sample was comparable to the total population of 490 individuals included in the interviews in regard to race, sex and socio-economic status. A higher proportion

TABLE 3  
PARASITOLOGICAL FINDINGS OF ENTIRE SURVEY (TOTAL OF 357 STOOLS)  
FROM FOUR AREAS

	West 12th St.	East End	Scott	College Station	Total specimens positive	
					No.	%
Total specimens from each area	80	94	90	93		
Parasites						
<i>Entamoeba histolytica</i>	2	3	1	6	12	3.4 <sup>a</sup>
<i>Entamoeba hartmanni</i>	6	10	9	15	40	11.2 <sup>a</sup>
<i>Entamoeba coli</i>	7	20	21	26	74	20.7
<i>Endolimax nana</i>	11	11	12	17	51	14.3
<i>Giardia lamblia</i>	2	13	8	12	35	9.8
<i>Chilomastix mesnili</i>	0	1	3	1	5	1.4
<i>Trichomonas hominis</i>	0	0	1	0	1	0.3
<i>Dientamoeba fragilis</i>	1	1	0	3	5	1.4
<i>Ascaris lumbricoides</i>	1	0	2	0	3	0.8
<i>Hymenolepis nana</i>	1	0	0	3	4	1.1
<i>Enterobius vermicularis</i>	1	0	0	0	1	0.3
Parasite total	32	59	57	83	(140) <sup>b</sup>	(39%)
Amoebic prevalence rate <sup>c</sup>	22%	33%	36%	41%	APR total 33%	

<sup>a</sup> Combined *E. histolytica* and *E. hartmanni* prevalence = 13.1%.

<sup>b</sup> Number of specimens positive for one or more parasites.

<sup>c</sup> Infection with one or more of *Entamoeba histolytica*, *E. hartmanni*, *E. coli*, *Endolimax nana*.

of children (0-14 years of age) submitted specimens than did the older members of the families.

Of the 357 faecal specimens examined 140, or 39%, were positive for one or more parasites (Table 3). The highest number of parasitic infections (83) was found in College Station, with West 12th Street contributing the lowest number (32). The most prevalent parasite was *Entamoeba coli*. There were relatively few helminth infections detected: three *Ascaris lumbricoides*, and four *Hymenolepis nana* and a single *E. vermicularis*. The latter parasite was an accidental finding since the technique by which it was found (FE concentration) is not the recommended procedure for detecting pinworm infections. *Trichomonas hominis* was also rare. The over-all amoebic prevalence rate (APR) (Brooke et al., 1955)—i.e., infection with one or more of the four species of amoeba (*Entamoeba histolytica*, *E. hartmanni*, *E. coli* and *Endolimax nana*)—was 33%. A total of 12 specimens (3.4%) were positive

for *Entamoeba histolytica*. *Entamoeba hartmanni*, now considered by some to be a separate species (Burrows, 1957, 1959; Goldman, 1959) or a small race of *E. histolytica*, was found in 40 specimens (11.2%). The combined *E. histolytica*-*E. hartmanni* prevalence was 13.1%.

#### Reports of diarrhoea and consistency of stools

The families interviewed reported 42 of 490 members (9%) as having had diarrhoea during the previous six months. The greatest number of reported diarrhoeas was in the West 12th Street area where 20 (18%) of 114 persons were reported as having had diarrhoea. The smallest number was in College Station with only 2 (2%) of 113 individuals. A total of 308 stools was obtained of which the consistency was recorded (Table 4). In the West 12th Street Area, there was the lowest percentage (31%) of soft or loose stools, while at College Station there was the highest (51%). There was no correlation

TABLE 4  
REPORTS OF DIARRHOEA AND CONSISTENCY OF STOOLS

Area	Reports of diarrhoea			Consistency of stools collected		
	Total persons in families	Reporting diarrhoea		Total stools with consistency recorded	Soft or loose consistency	
		No.	%		No.	%
West 12th Street	114	20	18	75	23	31
East End	157	11	7	86	31	36
Scott	106	9	9	69	38	55
College Station	113	2	2	78	40	51
Total	490	42	9	308 <sup>a</sup>	132	43

<sup>a</sup> 49 additional stools with consistency not recorded.

between consistency of stools and the reports of diarrhoea.

*Selected parasitological findings in relation to socio-economic status.*

The data in Table 5 indicate a possible correlation between a low socio-economic status and high amoebic prevalence rate, although the limitations in determining the socio-economic status (i.e., small number of families and lack of education information) must be borne in mind. College Station, with highest percentages of families in the lower socio-economic categories, revealed the highest percentage of positive specimens of *E. histolytica*, *E. hartmanni*

and the highest APR. It also had the highest percentage of most of the other identified organisms. West 12th Street area, which appeared to be of a higher socio-economic level than the other areas, had a significantly lower APR ( $P < 0.02$ ). Its rate for *E. histolytica* was one-half that found at College Station, but, it was not lower than that found in the other two areas, East End and Scott.

*Amoebic prevalence rate in relation to source of water*

In order to determine the relationship of water source to the results of this survey, the APR for the four age-groups, using either city or well water, was

TABLE 5  
SELECTED PARASITOLOGICAL FINDINGS IN RELATION TO SOCIO-ECONOMIC STATUS OF THE AREAS

Area	No. of specimens examined	Percentage positive for parasites	Parasites			Percentage in lower socio-economic status
			<i>E. histolytica</i> (%)	<i>E. hartmanni</i> (%)	APR <sup>a</sup> (%)	
West 12th Street	80	28	3	8	22	33
East End	94	41	3	11	33	75
Scott	90	39	1	10	36	84
College Station	93	47	6	16	41	86
Total	357	39	3	11	33	71

<sup>a</sup> Positive for one or more of four amoebae (*Entamoeba histolytica*, *E. hartmanni*, *E. coli*, *Endolimax nana*).

TABLE 6  
 AMOEBIC PREVALENCE RATE OF VARIOUS AGE-GROUPS  
 IN RELATION TO SOURCE OF WATER

Age-group (years)	City water		Well water	
	No. of persons	APR (%)	No. of persons	APR (%)
0-4	39	13	43	37
5-14	64	45	60	38
15-39	40	30	55	36
40+	22	23	34	27
Total	165	31	192	35

determined (Table 6). The total APR for the two water sources is not significantly different (31% city water, 35% well water). Among individuals supplied with well water, the APR was high and remained so up to the 40-year-old group, at which age it fell and did not differ greatly from the APR for the 40+ age-group using city water. Fewer persons, however, were included in the older age-group, and this may be of significance in causing the lower rate.

Of particular interest was the lower APR (13%) in the 0-4-year age-group using city water. This was significantly lower ( $P < 0.05$ ) than in the comparable age-group using well water (37%) and was found to be lower than any other APR for any age-group or type of water used. An analysis of the records showed that the East End Area contributed significantly to the lower APR in the 0-4-year age-group. Investigation disclosed that the particular East End area surveyed had been supplied with city facilities (water, sewage, etc.) for a period of only six years. It is believed that this lower APR is a reflection of the improvement in sanitary facilities which shows up as a reduced prevalence rate in the age-group which would be most immediately benefited by such improvements.

#### DISCUSSION

In general, the results of the present survey indicate that it is possible in a community to have a large number of clinically significant cases of amoebiasis without a high prevalence of the parasite in the population. Although the cases presented by Dr Juniper were drawn from the entire State, a

number of them were from areas (Scott and College Station) covered by the present survey. This conclusion is also supported by the records of the Arkansas State Health Department Laboratory, which had found few infections with *E. histolytica* during the past several years. Since the large race is considered to be most probably the one involved in clinical amoebiasis and was indeed the only form found in Dr Juniper's patients, a prevalence of 3.4% did not indicate an unusual occurrence of the parasite in the population surveyed. This is slightly higher than the prevalence (1%) recently computed by Magath (1960) but is within that (1%-5%) estimated by Burrows (1961) after an analysis of 166 surveys performed in the United States of America and Canada.

In the analysis of this study, children (0-4 years) living in households supplied with city water had significantly fewer amoebae (APR) than a similar age-group supplied with well or other sources of water. Since practically all of this favoured group also had inside plumbing available, the lower prevalence rate is probably a reflection of these two improvements in sanitation. In any event, the results demonstrate the benefits of extending modern facilities to areas of relatively low socio-economic conditions.

A rough estimate of socio-economic status as indicated by the occupation of the wage-earner has been used in an attempt to obtain a summary appreciation of many factors that possibly contribute to the epidemiology of intestinal amoebae. We were interested to observe the close correlation between the estimated socio-economic status and amoebic prevalence rates as revealed by the stool examinations. Although in this study we have obtained some evidence of the effect of improved water supply on lowering the amoebic prevalence rate, usually it is impossible to single out for analysis the influence of personal hygiene, sanitary facilities, crowding, diet, mental state, etc. Such factors are so closely interrelated that perhaps they defy separation in a field study, thus making it desirable to have some index to indicate the general epidemiological environment. In so far as intestinal parasites are concerned, socio-economic level may serve as such an index.

West 12th Street Area, with the fewest soft and loose stools, had the lowest prevalence of parasites. The other areas, with more loose stools, had more parasites. This correlation might have several possible explanations. It is tempting to suggest the



presence of parasites as the cause of the looseness. Although this may be a possibility, many of the parasites found are not known to cause diarrhoea. Of course, the highest prevalence of *E. histolytica* was found at College Station, which also had a high proportion of soft stools.

Another explanation might be that greater looseness facilitated the recovery and identification of the parasites. In other words, the loose bowels might have served the role of a cathartic in washing out the organisms. However, in this survey more parasites were actually found in formed than in soft stools.

A more likely explanation for the correlation might be concerned with the presence of other micro-organisms and with diet. The presence of intestinal parasites is indicative of poor sanitation and personal hygiene, which would also foster exposure to bacteria and viruses capable of causing diarrhoea. The authors have no information on the type of diets of the people surveyed, but it is possible that the type of diet associated with lower socio-economic status might have a greater tendency to produce loose stools as well as to foster the maintenance of infection with intestinal protozoa.

Aside from an initial visit to the area by epidemiologists to block out and select the general areas

and to confer with State, city and country officials, the selection of houses, visits, collection of specimens, laboratory examinations and determination of general critical data were accomplished in the space of less than three weeks. To a large extent, the cooperation of the individuals surveyed was due to the presence of a public health nurse in each survey team. The use of local nurses who were familiar with the areas and were acquainted with the people made the entire survey much easier.

This type of sample survey might be used for assessments of amoebiasis or other parasites in areas in the USA or elsewhere in conjunction with competent clinical studies. At the Sixth International Congress on Tropical Medicine and Malaria held in Lisbon in 1958, a resolution was passed and addressed to the World Health Organization pointing out the need for an objective appraisal of the prevalence and clinical importance of strains of *Entamoeba histolytica* in selected areas of the world. It is felt that the present type of sample survey is one which might prove useful in that connexion. Although in this survey the laboratory work was done in the field, it could be performed in a central laboratory, since the specimens preserved in formalin and PVA fixative can be shipped easily and examined days or even weeks after collection.

## RÉSUMÉ

A la suite de l'identification à Little Rock (Arkansas, Etats-Unis d'Amérique), entre 1956 et 1961, de près de 60 cas d'amibiase dont sept eurent une évolution fatale, une enquête parasitologique par échantillonnage a été menée dans quatre districts choisis à Little Rock même et dans les environs immédiats en vue de réunir des renseignements sur la fréquence de l'infection par *Entamoeba histolytica*. Le choix de ces quatre districts a été guidé par le désir de tenir compte des différentes conditions de milieu où vivent les parties les moins favorisées de la population; à l'intérieur de chaque district les familles ont été choisies en utilisant une table de nombres aléatoires. L'étude des échantillons de selles convenablement fixés et conservés a montré que 3,3% des 357 personnes dont les selles ont été examinées étaient infectées par *E. histolytica*.

La fréquence des autres parasites était: pour *E. hartmanni*, 11,2%; pour *Entamoeba coli*, 20,7%; pour *Endolimax nana*, 14,4%; pour *Giardia lamblia*, 9,8%. Les autres parasites trouvés lors de ces examens (3 espèces de protozoaires et 3 espèces d'helminthes) avaient une fréquence inférieure à 1,5%. La somme des fréquences de *E. histolytica* et de *E. hartmanni* était de 13,1%.

Les taux d'infestation amibienne pour les quatre districts furent pour West 12th Street de 22%; pour East End de 33%; pour Scott de 36%; pour College Station de 41%. Le taux d'infestation du district de West 12th Street, où les conditions économiques et sociales sont nettement meilleures que dans les autres districts, était inférieur de façon significative. Il ne semble exister aucun rapport entre la consistance des selles et la fréquence de la parasitose.

Un taux significativement bas d'infestation amibienne a été trouvé dans un groupe de sujets âgés de 0 à 4 ans et habitant dans le district East End où les canalisations d'eau de ville et des cabinets d'aisance intérieurs existent depuis seulement six ans.

Les résultats de cette enquête montrent que dans une zone déterminée l'on peut observer un nombre apparemment important de cas d'amibiase sans que le taux d'infestation de la population soit très élevé. Les auteurs estiment que ce type d'enquête pourrait être effectué dans d'autres régions, lorsqu'il faut évaluer l'importance du rapport entre l'existence du facteur étiologique et la présence ou l'absence de l'amibiase clinique.

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