Awareness of Sickle Cell Disease Among High School Students in Kingston, Jamaica

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AWARENESS OF A DISEASE by the medical profession or by the general public is often not commensurate with the disease's frequency or importance. This is the case with sickle cell anemia, which, in spite of its high rate of occurrence in the United States, had been heard of by only 30 percent of the Negroes in a Virginia study (*1*) and by an even smaller percentage of Negro army recruits in Texas (*2*). The results of a 1974 study in Jamaica indicated that 10.4 percent of the island's population has the sickle cell trait and 1 of every 166 babies has some form of sickle cell disease (*3*). In view of this high rate of occurrence and in order to design appropriate educational programs, a questionnaire survey was carried out to assess the extent and sources of knowledge about sickle cell anemia and the role of some educational and socioeconomic factors in the level of knowledge.

The questionnaire was given to 1,330 students—576 males and 754 females—enrolled in grades 7 through 13 and in commercial and teacher training groups, equivalent to grades 12 and 13, in a Kingston high school. Participants' ages ranged from 10 to 20 years; 12 years was the modal age for grade 7 and 18 years for grade 13. The students were of predominantly African descent; some were Chinese, Indian, European, or of mixed racial origin. The proportion of Negroes was slightly lower than in the general Jamaican population. The lower socioeconomic groups are also known to be underrepresented in the study school as well as in other high schools in Jamaica.

In addition to personal questions, the questionnaire asked:

Have you heard of sickle cell anemia?
If yes, did you learn about the disease through

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—radio?
—television?
—a newspaper or magazine?
—a friend or relative or both?
Do you know anybody with the disease?
Do you have sickle cell anemia?
How do people get the disease?
What races does it affect?
How common is it in Jamaica? (multiple-choice question)
What troubles does the disease cause?
Can it be treated?

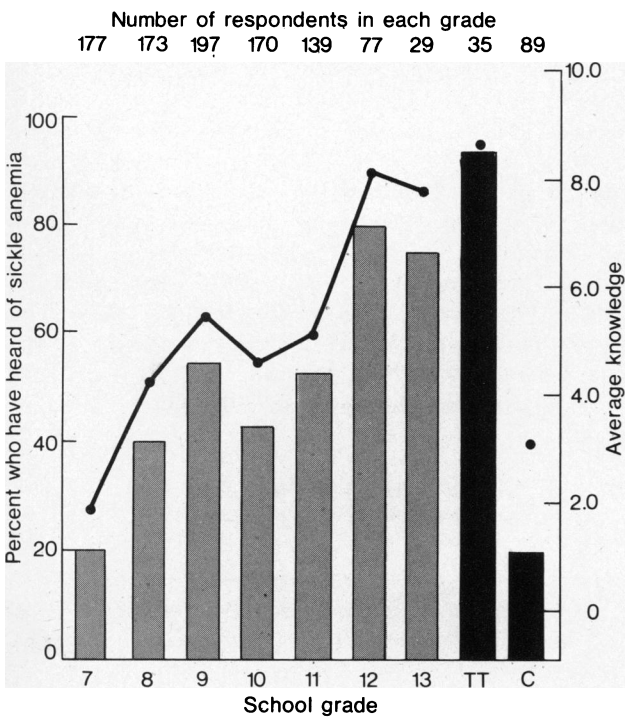
Results

The questionnaire was completed by 1,092 students (453 males and 639 females) representing 82 percent of the school's total enrollment (see chart). Response rates were high (83 to 98 percent) in all but three classes, where the lower response rates (46 to 64 percent) were attributed to school examinations being given at the same time. Response rates were higher for females than males (85 versus 79 percent).

The students described their racial origins as Negro, 86 percent; mixed (Negro-white, or not specified) 6 percent; Chinese or part-Chinese, 4 percent; Indian or part-Indian, 3 percent; and white, 1 percent.

For the purpose of this analysis, the students were divided into upper and lower socioeconomic groups, based on their addresses and parents' occupations. By these criteria, 41 percent were designated as being in the upper socioeconomic group—the proportion ranging from 39 to 46 percent in grades 7 through 10 and from 47 to 51 percent in the higher grades. More than half of the responding students said they had relatives who were physicians or nurses.

Awareness of sickle cell anemia among 1,092 high school students in Kingston, Jamaica



[1] Does not total 1,092 because 6 students did not state their grades. NOTE: T.T., teacher training class; C., commercial class; T.T. and C. classes are not an extension of the range of grades 7-13.

Of the 1,092 students, 495, or 45 percent, had heard of sickle cell anemia, the percentage rising with educational level from 20 percent in 7th grade to 94 percent among the trainee teachers (see chart). Awareness of the disease was greater among females (54 percent) than among males (33 percent), greater in the upper socioeconomic group (54 percent) than in the lower (39 percent), and greater among those with physicians or nurses among their relatives (53 percent) than among those without (35 percent). This latter difference persisted after adjustment for social class. There were no racial differences in awareness of the disease.

The following results apply only to the 495 students who had heard of the disease. The source of information on sickle cell anemia were friends or relatives, or both, 75 percent; newspapers or magazines, or both, 23 percent; television, 21 percent; and radio, 4 percent. Of the 495 students, 201, or 41 percent, claimed they knew someone with the disease; 11, or 2 percent, thought they had the disease. From the results of subsequent laboratory tests, we knew that 3 of these 11 students had sickle cell-hemoglobin C disease, 2 had homozygous sickle cell disease, 2 had the sickle cell trait, and 3 had a normal (AA) genotype; 1 was not examined.

Approximately half of the students (49 percent) said the disease is genetically determined, but most of the remainder (48 percent) did not state the cause. The question on the frequency of sickle cell anemia was answered by 35 percent of the students, but only half gave an approximately correct answer (1 occurrence in 500 persons) and half gave the answer 1 in 10. The responses to the question concerning troubles the disease causes are shown in the table. In response to the question "Can the disease be treated?" 46 percent thought it could, 16 percent said it could be treated but not cured, and 7 percent thought that there was no treatment; 31 percent did not answer this question.

Knowledge of the disease was assessed by a point system as follows: Knowledge of hereditary character (+2 points), racial involvement (−1 to +2 points), correct frequency of occurrence (+2 points), correct symptoms (−2 to +3 points for each major symptom), and the possibility of treatment (+1 to +3 points). With this system, scores rose with the educational level from a mean of 1.7 for grade 7 to 8.3 for trainee teachers. The pattern closely resembled the pattern of awareness (see chart). Besides educational level, other factors that were associated with increased points in this

Responses of students who had heard of sickle cell anemia to the question "What troubles does the disease cause?" (In percentages)

School grade	Correct symptoms						Vague symptoms	Incorrect symptoms
	Weakness [1]	Anemia [2]	Special features [3]	Pains [4]	Jaundice [5]	Ulcers [6]		
7	6	6	6	3	3	3	6	3
8	17	32	6	16	13	6	6	12
9	33	24	24	10	8	0	4	5
10	30	29	12	3	0	8	3	4
11	19	22	7	16	4	3	0	20
12	42	11	32	36	5	7	2	8
13	32	41	27	23	0	14	0	5
Teacher training	61	27	30	30	0	6	9	18
Commercial	6	11	6	11	0	6	11	11
Average for all grades	28	23	16	15	5	5	4	10

[1] Weakness, tiredness, poor general health, loss of weight, poor growth.
[2] Anemia, or mention of the blood being affected.
[3] Special features such as liver, kidneys, or eyes being affected; blocked capillaries, poor circulation, immunity to malaria; early death; offspring affected.
[4] Pains in hands, feet, joints, abdomen, back, limbs, or chest.
[5] Jaundice, yellowness.
[6] Ulcers or sores, poor healing of wounds.

scheme were personal acquaintance with an affected person (2.0 points higher regardless of school grade) and being female (0.7 point higher). Having relatives in the medical profession or belonging to the upper socioeconomic group made a minimal difference (0.3 and 0.1 point respectively). Scores also differed according to the source of information—more knowledge being obtained from a variety of newspaper or magazines (1.5 points higher) than from friends or relatives (0.5 point) or television (0.2 point).

Discussion

Educational level was the most important factor influencing the awareness and knowledge about the disease. Both grades that showed exceptions to the steady increase in awareness had had specific instruction about the disease (see chart). In the 9th grade, sickle cell anemia was briefly used as a model for teaching genetics, and students in the 12th grade received a lecture on the disease. As in the Virginia study (*1*), the increase in knowledge about the disease corresponded with the general education level. Compared to education, other factors in our study exerted little independent effect. Personal knowledge of someone with the disease seemed the next most important factor and, as expected, articles in newspapers or magazines contributed greater factual knowledge than did other media.

The mean level of awareness of 45 percent in this high school sample cannot be extrapolated to the general population, because this was a selected group with educational and socioeconomic privileges. The figure for Jamaica as a whole would almost certainly be considerably lower than the 20 percent awareness level found among the commercial students, because, although these students were drawn from among the less academically oriented 11th grade students, their level of education was higher than most of the population.

As educational opportunities increase in developing nations with large black populations, awareness and knowledge of the disease will also increase. However, the process will be slow unless information is rapidly disseminated by specially designed programs. Our study results suggest that written articles are more successful to this end than either radio or television material, but this may reflect the present educational quality of broadcasting rather than the potential of these media. Our data do not enable us to comment on the potential educational value of lectures and discussions on the subject, but they obviously should be taken into consideration.

As awareness of sickle cell anemia increases, it becomes even more important that people receive correct, detailed information so that needless anxiety and fear of the diseases' consequences may be avoided.

References

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