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Disease Prevalence in a Rural Rhodesian African Secondary School

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The purpose of this study was to survey the physical health of the student body of a rural Rhodesian African secondary school, with the particular aims of ascertaining specific disease incidence rates, disease patterns and the desirability of routine medical examinations.

PLAN AND METHOD

Commencing February, 1967, at the request of the principal every student at the Chikore Secondary School, Forms I through IV, was required to undergo a complete physical examination at the Chikore Mission Hospital. Microscopic urine and stool examinations and haemoglobin estimates were included. These procedures were also followed on all new students entering January, 1968.

Relatively minor disabilities, such as headaches, head colds and transient gastroenteritides were excluded from this study by the regular weekday visitation of a qualified medical orderly screening complaints and dispensing medications in small amounts at the school.

RESULTS

A total of 381 students were examined over a period of one and a half years. The following record comprises a total disease inventory for this group—that is, a summary of laboratory and physical findings, hospital admissions and outpatient illnesses for all students from the dates of their admission to the school through July, 1968. These results are summarised below in two tables, one for more chronic disease, reported in per cent. incidence of the student population and excluding recurrences, the other for more episodic disease, reported in per cent. incidence per student per year. Diseases with incidence rates below 4 per cent., excepting venereal, have been excluded.

Table I
CHRONIC DISEASE

Disease	No. of Cases	Incidence Rate Per cent.
<i>Schistosomiasis haematobium</i>	79	20.7
<i>Schistosomiasis mansoni</i>	28	7.4
Hookworm	97	25.4
Anaemia	183	48.0
Hypertension	46	12.1
Ascariasis	37	9.7
Enterobiasis	39	10.2
Cystitis, non-venereal	49	12.8
Caries	35	9.2
Ringworm and other dermatitis	34	8.9
Acne	33	8.7
Scabies	33	8.7

Table II
EPISODIC DISEASE

Disease	No. of Cases	Incidence per Year* Per cent.
Sprains, bruises, lacerations	110	16.7
Pharyngitis, tonsillitis	84	12.7
Rhinitis, sinusitis and other upper respiratory infections	74	11.2
Bronchitis	67	10.2
Influenza and related viremias	44	6.7
Conjunctivitis	37	5.6
Malaria†	32	4.9
Venereal disease	16	2.4

* Incidence rate divided by 1.73 years average per student at time of study.

† Positive blood slides.

DISCUSSION

The outstanding disease in this rural secondary school group was bilharziasis, with a combined incidence of 28.1 per cent. Although this compares favourably with neighbouring primary outschools where survey rates of 60 to 70 per cent. are not uncommon, it compares quite unfavourably with the 1967 rates for European and Indian students at the same educational levels as presented in the 1968 report for the

Secretary for Health. These were 1.0 per cent. and 2.2 per cent. respectively for those specifically examined, who comprised 54 per cent. of the European students and 17 per cent. of the Indian. The 28.1 per cent. prevalence rate of this study is roughly comparable to those obtained for urban European students at the same educational levels 20 years ago as reported by Loveridge, Röss and Blair (1948). In view of the accumulating evidence indicating the deleterious effects of bilharziasis upon the full development of the child's mental and intellectual capacity (Clark and Blair, 1966), and of the growing appreciation of the seriousness of this disease (Gelfand, 1968), one cannot view this high prevalence rate except with concern.

Although the incidence of hookworm proved 25.4 per cent., egg loads were usually low, indicating infestation rather than frank disease. The incidence of malaria, 4.9 per cent. per year, indicates the still endemic presence of this disease in this district, particularly in the rainy season, and the fact that 27 per cent. of the students of this study come from the nearby Sabi Valley lowveld which they visit during holidays.

For purposes of satisfactory school study, reasonably normal haemoglobin levels are necessary. Although the incidence of anaemia by the criteria of this study (12.5 gm. per cent. or below for males, or 11.5 per cent. or below for females, Sahli method) proved 48.0 per cent., few instances of severe anaemia were encountered and none below 8.0 gm. per cent. Almost all cases were secondary to other disabilities, such as bilharziasis, hookworms, malaria or hypermenorrhoea.

The unexpectedly high prevalence of hypertensive disease, 12.1 per cent., in this student population as compared with a general incidence of 2.8 per cent. in a hospital sample for all age categories, was further investigated. An analysis of cases by severity indicated that 50.8 per cent. were of a mild degree* and that another 28.6 per cent. were at borderline levels.† Follow-up blood pressure readings on these students upon return from holidays revealed that significant decreases to normotensive levels had taken place in both the mild and borderline categories. This labile portion, comprising 23.5 per cent. of the hypertensive group, suggests the operation of situational factors in this pathogenesis. Whereas the high prevalence rate of bilharziasis gives concern for present disability, that for hypertension

presages unfavourably for future debilitation in this vulnerable 12 per cent. of the students.

The 16.7 per cent. per year incidence rate of sprains, bruises and lacerations suggests that school sports take a larger debilitating toll than is often appreciated. The cases of non-venereal cystitis represented largely latent bilharziasis. Venereal disease proved largely seasonal, mainly in students who had visited cities during the holidays. The 9.2 per cent. incidence rate of caries in this study, 5.3 per cent. of the students per year, represents cavities requiring extraction. Although statistically upon first impression this would seem high, the unmistakable clinical impression is that this reflects a generally healthy dental situation. Almost no prophylactic dental care is available to these students, the majority of whom appear fortunately to be completely free of caries. This situation contrasts with that for children in advanced countries where dental problems are reported proliferating faster than dentists can cope with them, and inevitably renews the question of why such a difference exists.*

Although in many respects a survey such as this must remain but preliminary, raising far more questions than answers, nevertheless certain general impressions emerge clearly. Whereas students came to the hospital voluntarily for acute and episodic disease, the bulk of the chronic disease, which was also on the whole the more debilitating, was elicited only through laboratory and physical examinations in students presenting no obvious complaints. These examinations detected 33 per cent. of all cases of bilharziasis, 53 per cent. of the cases of hookworm, 72 per cent. of those with anaemia and 98 per cent. of the hypertensives. In certain cases correctable congenital defects, such as hypopadius and imperforate vagina, were found. Quite commonly students were found with multiple pathologic entities. In 30.2 per cent. of these students no significant correctable chronic disease was detected.

SUMMARY AND CONCLUSIONS

A disease survey of the students in a rural Rhodesian African secondary school reveals that parasitic agencies and their sequellae comprise the main category of disability. Of the group investigated, approximately one in four suffered from bilharziasis, one in four from hookworm infection, one in five from either ascariasis or enterobiasis, and one in two from some measure

* Readings between 142/92 and 160/100; cases categorised by higher elevation, systolic or diastolic.

† Readings between 138/88 and 142/92.

* The 1968 annual meeting of the U.S. Dental Association heard the U.S. declared a "dental disaster area." (*A.M.A. News.*)

of anaemia. Seven out of ten had some form of correctable chronic disease.

The outstanding non-parasitic disease was hypertension. This was discovered in over 12 per cent. of these students as compared with 2.8 per cent. in a general hospital sample, and was thought to be possibly related to Western acculturation.

This study suggests that routine examinations of secondary level students could assist in eliminating a significant amount of chronically debilitating disease. The majority of this can be detected by urine, stool, haemoglobin and blood pressure examinations alone.

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