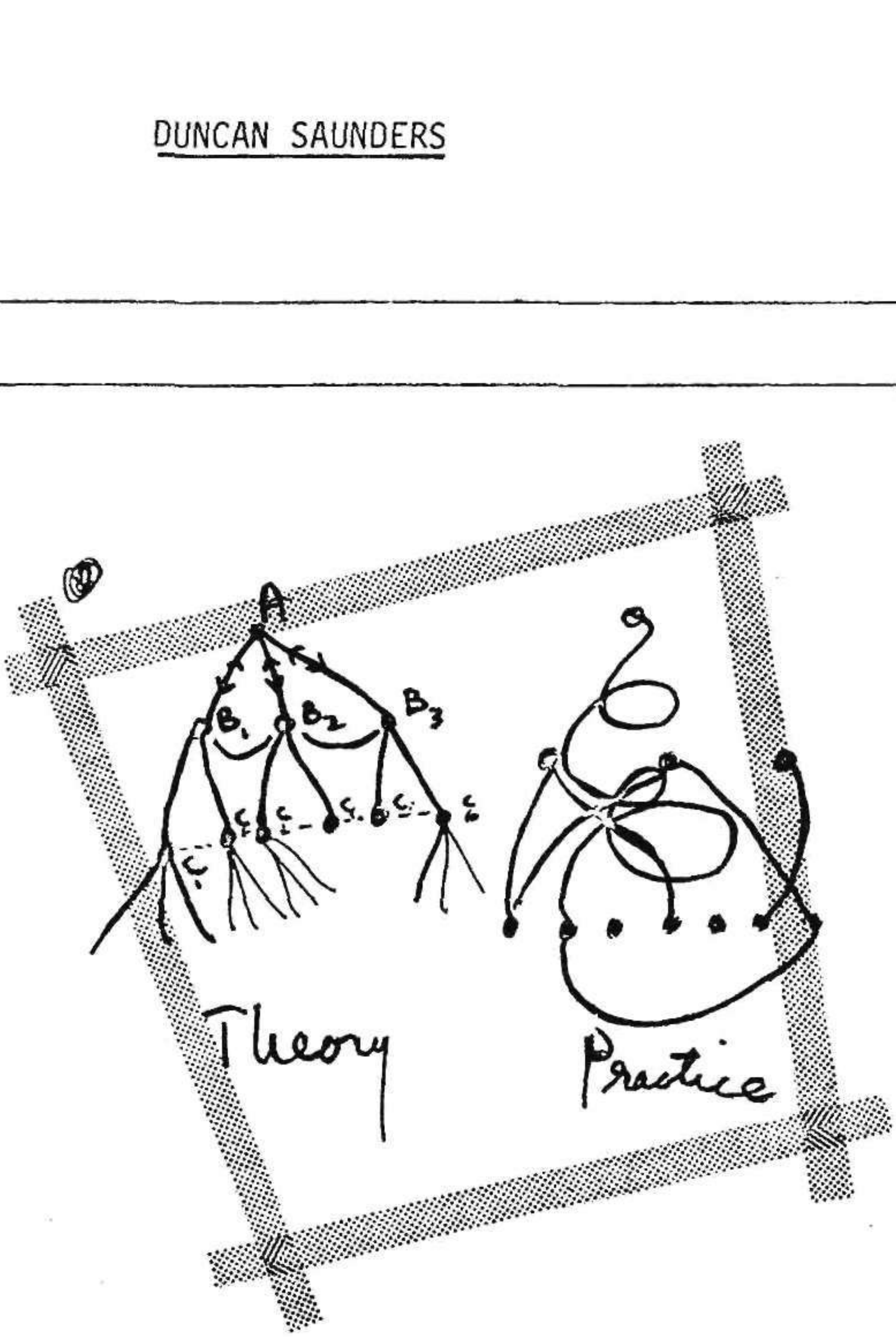
USES OF EPIDEMIOLOGY IN SOUTH AFRICA

DUNCAN SAUNDERS



USES OF EPIDEMIOLOGY IN SOUTH AFRICA.

The aims of this article are :-

1. To introduce some perspective on the use of epidemiology.

2. To encourage greater use of epidemiology by those interested in the health of the people of South Africa.

WHAT IS EPIDEMIOLOGY ?

The epidemiological study of disease has a long history - one as old as medicine itself. However, it is only comparatively recently that epidemiology has become a recognised discipline.

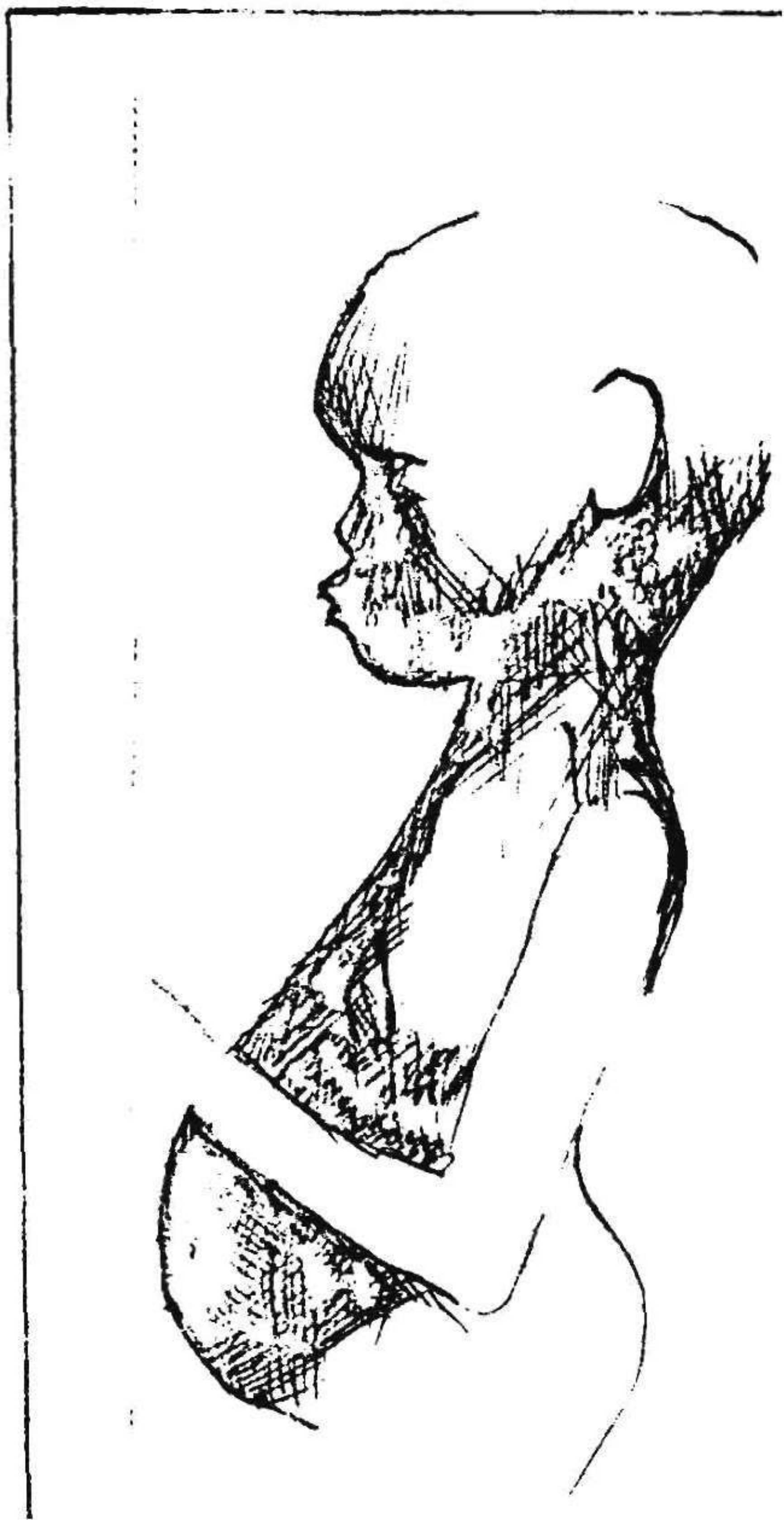
Modern epidemiology began in the nineteenth century with the study of infectious disease epidemics. An example is John Snow's investigation of an outbreak of cholera in London in 1854. He demonstrated by careful investigation that the epidemic was associated with contaminated water supplied by one of the water companies which served the city. His achievement was all the more remarkable if it is borne in mind that it occurred ten years before Pasteur discovered bacteria. Today, a pub stands at the site of the pump, the handle of which Snow is said to have removed, thereby stopping the epidemic.

Since then the scope of epidemiology has broadened considerably to include the following aspects of population health problems :-

(i) The size of the health problem (how much of a health problem is there ?).

(ii) The determinants of a health problem (what factors are associated with the health problems ?).

(iii) The evaluation of measures taken to improve health (Whether an action or treatment works or not ?).



By a population is meant any group of people with something in common, e.g. living in the same geographical area (e.g. population of Cape Town) or people suffering from a certain disease (e.g. Epileptics).

When the term epidemiology is used in this article we mean the method of looking at population health problems rather than the body of knowledge about population health problems resulting from the application of the epidemiological method. Therefore epidemiology is a way of obtaining or assessing evidence about population health problems.

Over the years various principles have been developed which form the basis of the design of epidemiological studies. Study designs appropriate to answering each of the questions listed above have been developed based on these principles. Epidemiologists are in general agreement about the validity of these study designs. The studies can be characterised as fitting into one of the following broad categories :-

(i) A descriptive study is concerned with ascertaining the size of a health problem.

(ii) An analytic study is done to find out the factors associated with a health problem.

(iii) An intervention study is done to find out whether an action or treatment has the desired effect.

ISSUES RELATING TO EPIDEMIOLOGICAL STUDIES.

Before mentioning examples of epidemiological studies it is worth considering some issues relating not to the design of studies but to the decision whether or not to undertake a particular study. These issues are often socio-political.

1. What harm can the study itself do ?

There is increasing awareness of the harm that medicine can do (1) (iatrogenesis). This is not confined to side-effects from treatment (e.g. deafness as a result of streptomycin treatment) but can also be in the form of less obvious effects such as overdependence and anxiety. An example of this is the morbidity caused among children with innocent heart murmurs who falsely perceive themselves to have heart disease (2). Also

if one "labels" a person as having a disease without there being provision made for treating it, the person may well be worse off than before. In this respect the adage - no survey without service - is worth remembering!

2. Will the study obscure real causes of health problems ?

The root causes of major causes of ill-health are socio-political. Epidemiological surveys may tend to blur the issues and create the impression that something is being done while the root causes remain unchanged. A lot of the research into protein energy malnutrition falls into this categary.

3. Is a study necessary to help one decide on a cause of action ?

Does one need to show that poor housing conditions are associated with a greater prevalence of certain diseases (e.g. Tuberculosis) before housing is improved? Is adequate housing not a right needing no justification on grounds of measurable morbidity ?

4. Are there more pressing questions that need to be answered?

In health care we are concerned with allocation of scarce resources. Epidemiological studies can help us make these decisions. At the same time we need to consider which areas need investigation most urgently. A National Heart Effort has been initiated by the South African Medical Research Council to combat the epidemic of ischaemic heart disease in South Africans. The initial research effort will cost more than 1 million rands. This will be raised by public subscription. While ischaemic heart disease is obviously an important health problem, is it not as important to evaluate interventions aimed at reducing the high mortality rates of Black infants in this country?

At present in South Africa these decisions are made by health professionals and politicians non-representative of the majority of the people. Therefore it is not surprising that the questions being studied are not those relevant to the problems of the majority of the people.

5. Are the results of academic use only or are practical steps going to be taken to use them to make policy decisions ?

A study of Soweto children in 1972 (3) showed one of the highest prevalence rates of rheumatic heart disease in comparable studies anywhere. However, up to now,no co-ordinated steps have been taken to deal with this problem. Meanwhile in nearby Johannesburg an enormously expensive hospital has been erected.

These considerations may appear to be negativistic and may act as a disincentive for one to undertake any studies. However, useful studies, many not costly in terms of time and money, can be done. The next section describes some of the ways in which epidemiology can and has been used.

USES OF EPIDEMIOLOGY.

It is useful to distinguish between studies where a community is the population being studied and those where patients of the health service are being studied. In the former one hopes to collect information which can be used to improve the health of the community. In the latter one hopes to benefit the recipients of the service by using the information to reorganize the provision of the services.

(i) Health Service Based Studies.

A practice profile study e.g. the Cape morbidity survey (4) describes the pattern of illness seen by the service. The collection of these data can be incorporated into the running of the service. Knowing the relative frequency of the conditions one may be able to make more rational decisions about the allocation of staff and resources. The above study described the pattern of diagnoses of 15 general practitioners over a period of 12 months. Its findings were to be used for training medical students in primary care.

By evaluating differences in radiological assessment (5), prescribing habits (6) and the use of special investigations (7) by different staff members, one can provide information that may be useful for promoting discussion on the optimal use of drugs, x-rays and special investigations.

For conditions requiring long term treatment (e.g. hypertension or tuberculosis) it is important to know whether patients take their treatment regularly. A study done in Johannesburg (8) showed that less

TABLE 1:

AGE SPECIFIC MORTALITY RATES OF DIFFERENT POPULATION GROUPS IN THE R.S.A. (1970) - (DEATHS PER 1000 POPULATION).

	AGE (YEARS):								
	INFANT	-1	1-4	5-14	15-24	25-34	35-44	45-54	55-64
WHITES	21,6	22,7	1,1	0,5	1,5	1,7	3,8	9,0	20,1
ASIANS	36,4	41,4	3,6	0,8	1,4	2,3	5,6	14,5	33,9
COLOUREDS	132,6	139,4	14,7	1,2	2,7	5,1	8,8	17,0	31,2
BLACKS	123,9?	135,8	15,6	1,4	3,0	4,9	8,3	15,3	27,7

than a third of diagnosed hypertensives were still returning for treatment at the end of one year. The above study also looks at the problem of lack of standardization of management of patients.

Apart from evaluating how we are providing health care, we can also evaluate whether health care does any good. This requires more complex methods, ideally randomized controlled trials. Probably in South Africa this kind of study should be mainly concerned with evaluating ways of improving the effectiveness of already tested drugs and techniques e.g. testing new strategies for improving compliance of anti-hypertensive drugs (9).

Many health service based studies can be done from routine patient records if these are accurately kept.

Population Based Studies.

In order to estimate the extent of health problems in a community one may use statistics already routinely collected. Wyndham and Irwig (10) have analysed the mortality rates and causes of death by age, sex and ethnic group in South Africa from official death and census statistics.

The age specific mortality rates are shown in Table 1.

About half the deaths in the Black and Coloured populations occurred in the children aged 0-4 years. In addition gastro-enteritis and pneumonia were shown to be the cause of death in 60% of Black and Coloured infants and children. The implications for health planning are obvious. Kustner (11) showed the trends in typhoid fever, tuberculosis, poliomyelitis and malaria from official notifications.

However, one may need more accurate data than can be collected from routinely collected statistics and then one needs to do special surveys.

Examples of studies of this kind are :-

(a) A study to determine the prevalence rate of rheumatic heart disease in Sowetan Creche and primary school children (3) showed an extremely high overall privalence rate of 6,9 per 1000.

(b) A study to determine the extent of malnutrition of young children (12).

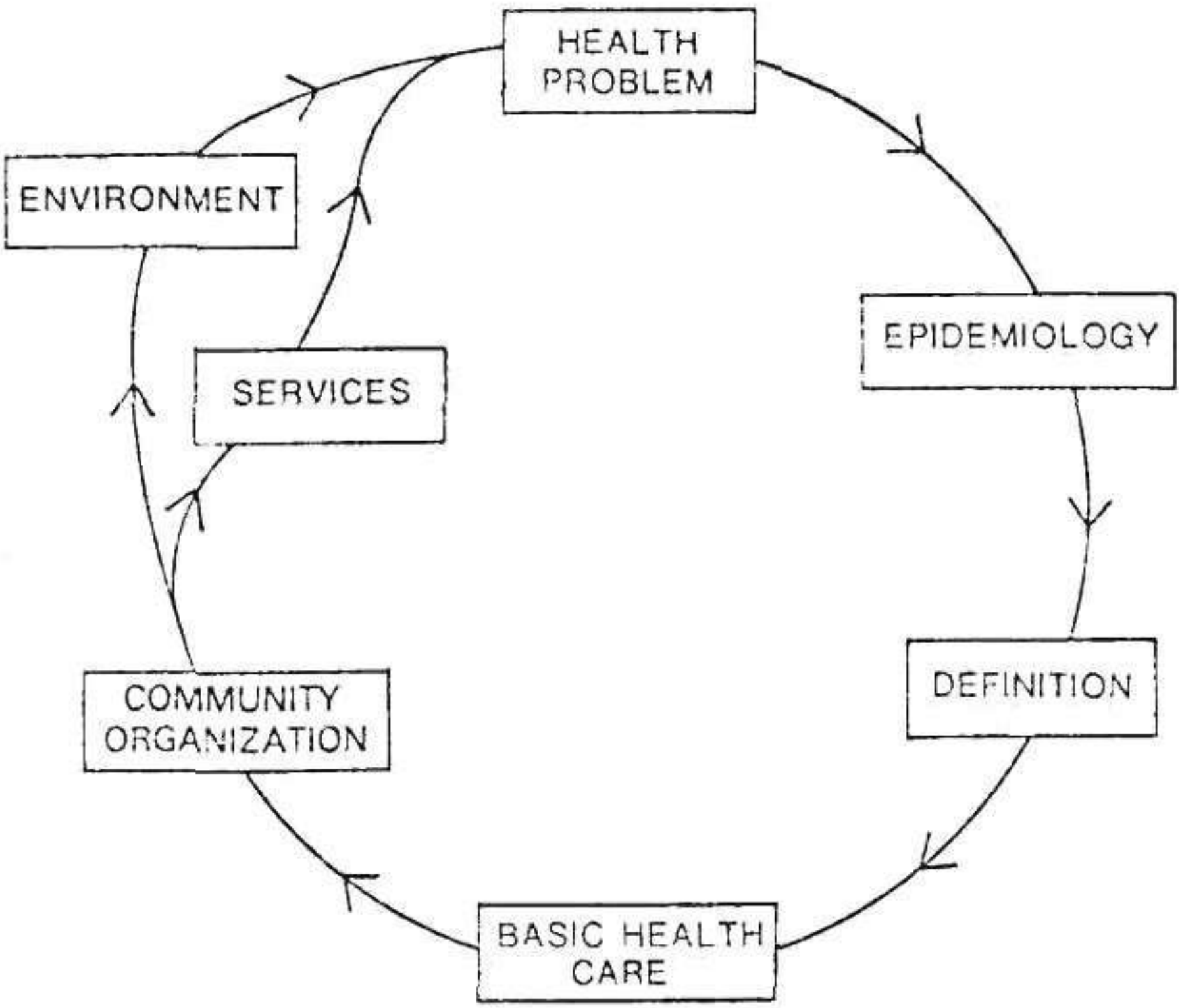


Fig. 1.1. Flow diagram illustrating the relationship between epidemiology, community organization, and basic health care.

Taken from: Basic Health Care in Developing Countries
An epidemiolocical perspective
Edited by Basil S.Hetzel

In addition one can do surveys to evaluate the impact of health interventions.

Sutter and Ballard (13) reported that voluntary health workers were effective in the control of trachoma. Kark and Cassel (14) reported health improvements which could be attributed to a health programme.

Epidemiological studies may be difficult and costly. However, many can be done without great expertise and at little cost. For instance, from routine clinic records it is easy to see whether hypertensive patients are coming back for treatment regularly and whether their blood pressures are controlled.

In the next issue of Critical Health, the design of a Descriptive Study will be discussed. References mentioned in this article appear below. A short bibliography also appears at the end of this article for those who want to read more about epidemiology. If people are planning studies and feel they would like to discuss it with a person with some epidemiological experience, a resource person can be contacted through the editors of Critical Health.

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1.2. Barker, D.G.P. and Rose G. (1976). Epidemiology in Medical Practice. Churchill Livingstone, Edinburgh.

1.3. Alderson, M. (1976). An introduction to Epidemiology. MacMillan: London.

The above are among the best known basic textbooks.

1.4. Morris, I.N. (1976). Uses of Epidemiology: Churchill Livingstone, Edinburgh.

By the use of forceful examples the many uses of epidemiology are well presented.

1.5. MacMahan, B. and Pugh T.F. (1970). Epidemiology.: Principles and Methods. Little, Brown and Company, Boston.

More advanced discussion of epidemiological principles.

2. PRACTICAL TEXTS.

2.1. Barker, D.G.P. (1976). Practical Epidemiology. Churchill Livingstone, Edinburgh, 2nd Ed.

Short practical manual for use in developing countries

2.2. Abramson, G.H. (1979). Survey Methods in Community Medicine: An introduction to Epidemiological and Evaluative studies. Churchill Livingstone, 2nd Ed.

A systematic guide to the planning and performance of studies. Many references.

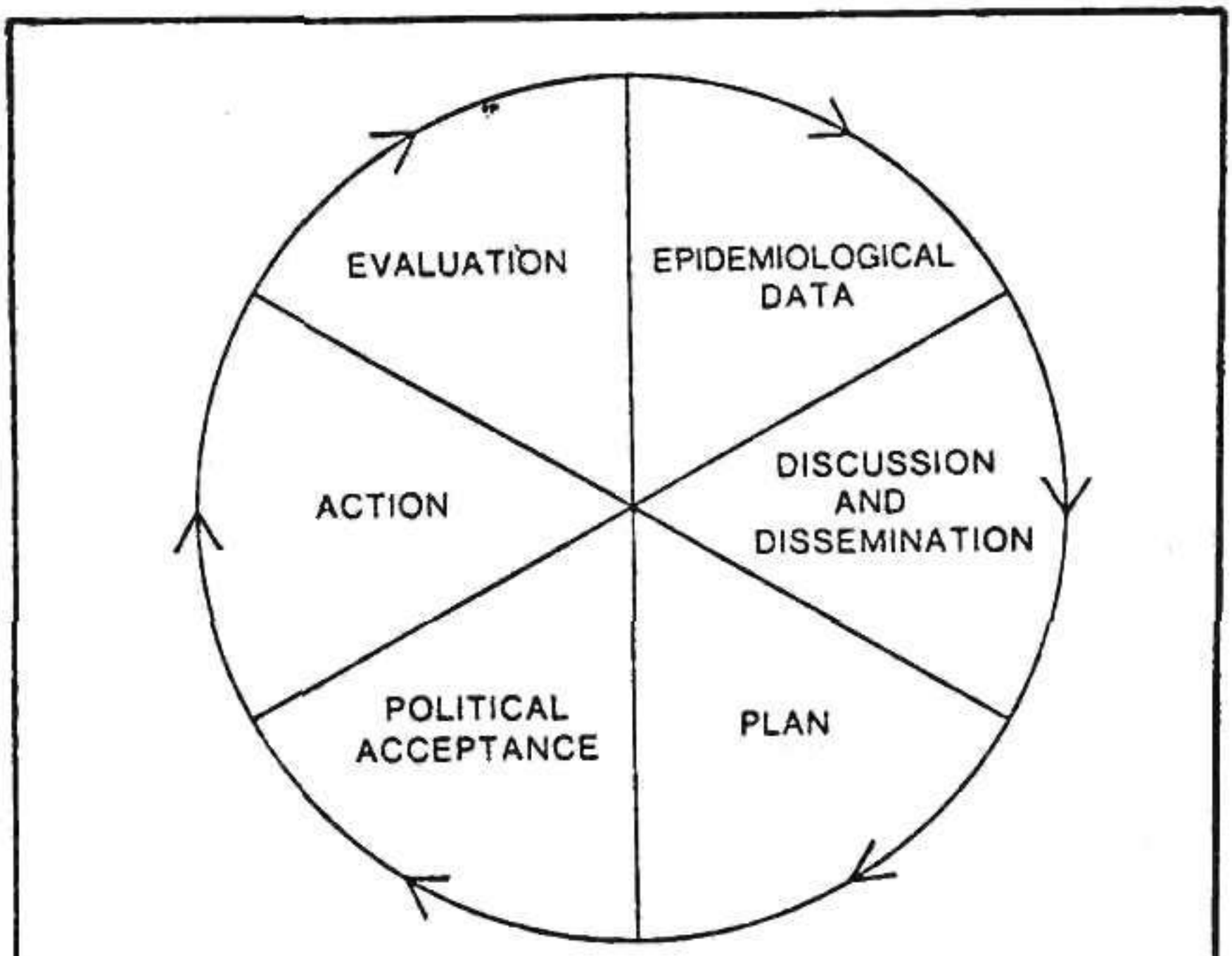

Fig. 1.2. Model of the social process linking epidemiology to basic health care.

Taken from: Basic Health Care in developing Countries
An epidemiological perspective
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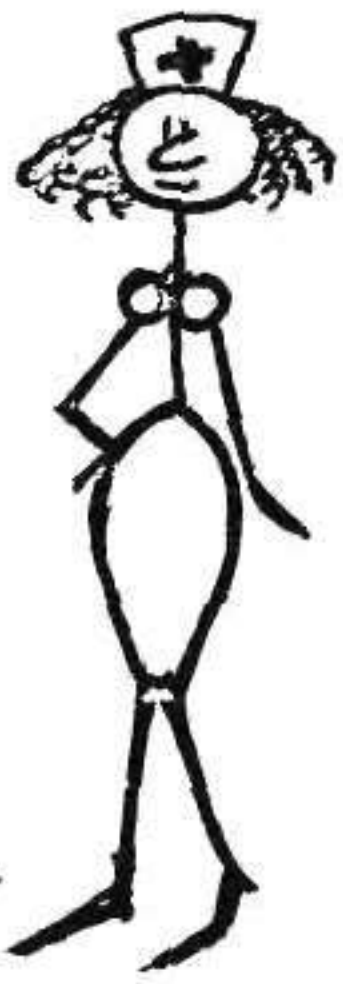

TRAIN DOZENS OF LAY COMMUNITY HEALTH WORKERS

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YOU CAN SPEND IT CELEBRATING THE END OF HEALTH YEAR !

A banquet extravaganza

By TONY STIRLING
Chief Reporter

RDM NOV. 24 '79

THE DEPARTMENT of Health's banquet at a Johannesburg hotel this week to mark the end of Health Year staggered many guests — they estimated it cost about R30 000 of the Health Year budget.

One guest said "I was disturbed. I thought the money left in the Health Year budget should have been spent on a worthwhile public health project instead of being lavished on a function like that".

The food and drinks bill was estimated at about R10 000, but one source estimated the "trimmings" added on another R20 000.

● About 420 people attended the function in the Carlton Hotel on Tuesday night;

● Each male guest received a pair of 9ct gold plated cufflinks carrying a Health Year motif. The women received silver pendants. The gifts were wrapped in special wrapping paper;

● The menus for the function were three pages long and printed in gold lettering. Each menu contained a leather book marker, engraved with gold lettering;

● The dinner itself was described by the Carlton as a "R15,45 a head menu".

It consisted of Avocado Ritz, soup, a health salad, lamb, desert, biscuits and cheese and coffee. South African wines, liqueurs and sherry were also served.

● A number of works of art, commissioned by the department from various artists, were unveiled.

● Gifts were made to the Minister of Health, Dr L A P A Munnik, and his predecessor, Dr Schalk van der Merwe, of prints of the art works commissioned by the department.

While many critics of the banquet praised what had been achieved by the department in its Health Year programme, the "extravagance of the occasion caused raised eyebrows".

Dr J de Beer, the Secretary for Health, said last night he did not know the cost of the function but confirmed it was paid for by the Department of Health.

He viewed the banquet as a small gesture of appreciation for the voluntary workers who had put in many hours of work to make Health Year a success. The department had received many messages of appreciation for the function.

It was 'a small gesture'

From Page

EPIDEMIOLOGY SOUTH AFRICAN STYLE.

Dr. Grove the director of Hospital Services in the Transvaal was recently questioned about the shortage of hospital facilities for blacks in Soweto :-

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The Star Tuesday January 8 1980 13

Q: What is the acceptable ratio of doctors to patients (not beds) in white hospitals in the Transvaal? What is the ratio in black hospitals?

Dr Grove: "There is no ratio of doctors to number of beds or number of patients. The total time spent by doctors in all their activities is taken as the criterion for the number of posts of medical doctors to be created. There is no difference between standards applied to different races of patients."

Q: What is the acceptable ratio of nurses to patients in white/black hospitals in the Transvaal?

Dr Grove. Staff allocation is not done according to a fixed ratio. In both white and black hospitals, the nursing staff for each ward is determined according to the discipline and activity in the ward based on a set of norms applicable to all hospitals.

Q: How many general practitioners are there in private practice in white areas in the Transvaal? In black areas of the Transvaal? In Soweto?

Dr Gove: No replies to these questions can be furnished.

Q: What are the major illnesses in the white population of the Transvaal?

Dr Grove: We don't keep statistics on this.

Q: What are the major illnesses in the black population of the Transvaal? In the black population of Soweto?

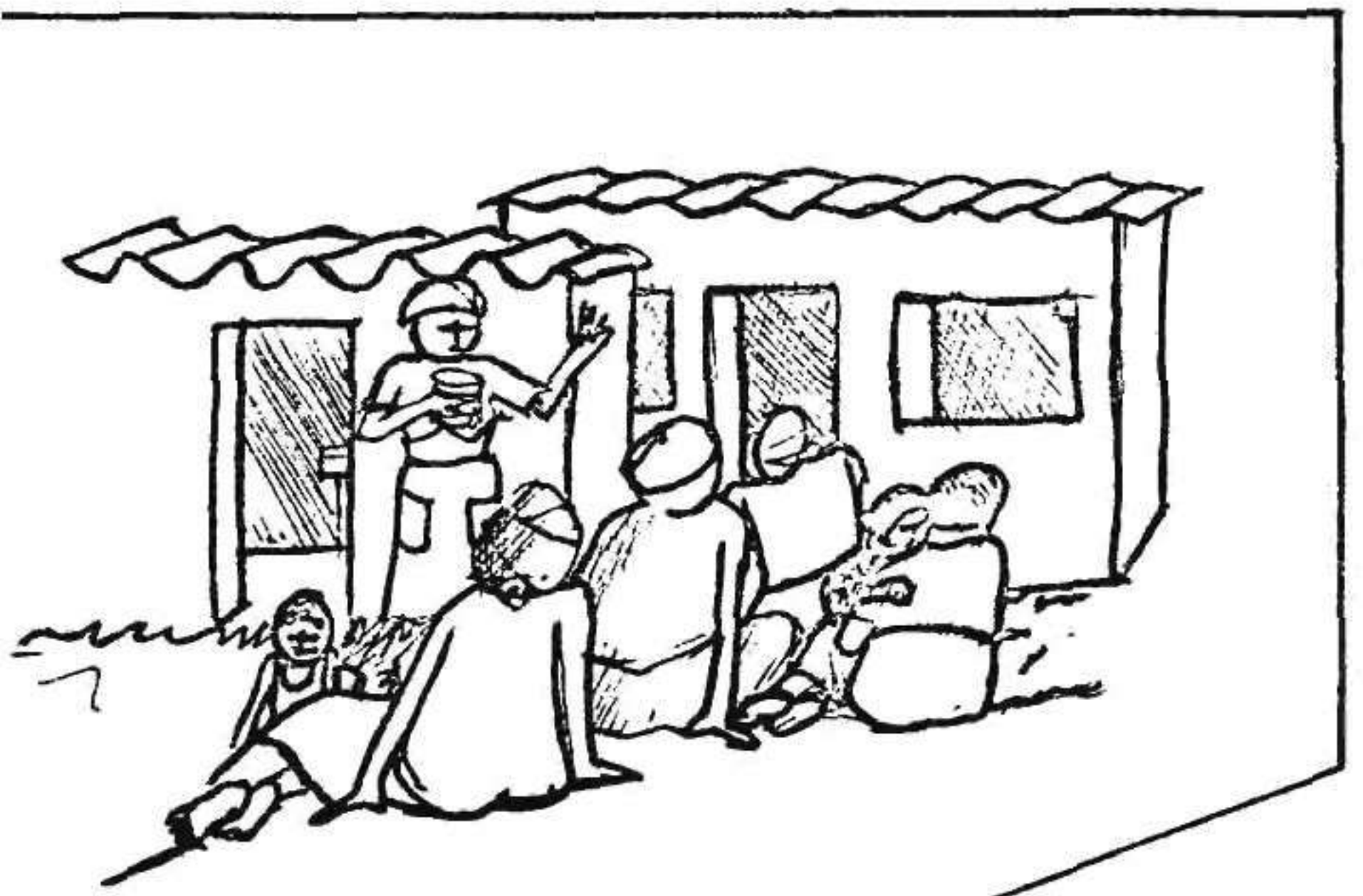
Dr Grove: We don't keep statistics on this either.

Q: Do these illnesses necessitate different forward planning for the different groups? If so, can you please expand?

Dr Grove: Falls away

Q: How much has the Government spent on white hospitals in the Transvaal in the past ten years? How much has the Government spent on black hospitals in the Transvaal in the past ten years?

Dr Grove: This department cannot comment on the spending by the Central Government on non-provincial hospitals The Provincial Administration is responsible for expenditure on provincial hospitals. Most of the provincial hospitals in the Transvaal are multi-racial and expenditures by these hohpitals in respect of the white and non-white sections are not kept separately. Expenditure by these hospitals on medicines provisions, electricity and water supply is not allocated to the white and non-white section separately.



PRIMARY HEALTH CARE

NEW MUSIC - OLD HARMONY

BY MARIT KROMBERG