DEVELOPING A PROVINCIAL EPIDEMIOLOGIC AND DEMOGRAPHIC INFORMATION SYSTEM FOR HEALTH POLICY AND PLANNING IN KWAZULU-NATAL.

Dr DL BUSO
[BSc (FH); MBCHB (UN); DHSM (UN); FCPHM (CMSA); MsHPPF (London); DTMSH (London)]

DECLARATION

This dissertation is the candidate's original work and has not been submitted in any form to another university.

The sources of data have been duly acknowledged in the text.

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ABBREVIATIONS

AIDS :   Auto Immuno-Deficiency Syndrome
ANC :   Ante-Natal Care
CDC :   Communicable Diseases Control
CHESS :   Centre for Health and Social Studies
CPU :   Child Protection Unit
CSS :   Central Statistics of South Africa
DHS :   District Health System
DIOs   :   District Information Officers
DoH   :   Department of Health
EDIS   :   Epidemiological and Demographic Information System
HIS :   Health Information System
HIV :   Human Immunodeficiency Virus
HST :   Health Systems Trust
KEH :   King Edward V111 Hospital
KZN :   KwaZulu-Natal
LA :   Local Authority
MEC   :   Member of the Executive Council
MMR :   Maternal Mortality Rate
<5 MR :   Under 5- Mortality Rate
NCCEMD :   National Committee on Confidential Enquiries into Maternal Deaths
NCCFW :   National Council for Child and Family Welfare
NHISSA :   National Health Information System of South Africa
NHP :   National Health Plan
NNMR :   Neo-Natal Mortality Rate
PHC :   Primary Health Care
PMC :   Primary Medical Care
PNMR :   Peri-Natal Mortality Rate
RDP :   Reconstruction and Development Programme
SA :   South Africa
SADHS :   South African Demographic Health Survey
Stats SA :   Statistics South Africa
STDs :   Sexually Transmitted Diseases
TB :   Tuberculosis
TOP :   Termination of Pregnancy

SUMMARY

Since 1994, a turning point in the history of South Africa (SA), significant changes were made in the delivery of health services by the public sector, provincially and nationally. The process of change involved making important decisions about health services provision, often based on past experience but ideally requiring detailed information on health status and health services. For an example, Primary Health Care (PHC) was made freely accessible to all citizens of this country. Many studies on the impact of free PHC in the country have shown increased utilization of these services.[40] In the context of HIV/AIDS and its complications and other emerging health conditions, reasons for this increased utilization may not be that simple.[117, 118] Parallel with increased utilisation has been uncontrollable escalation of costs in the Department of Health (DoH), often resulting in ad-hoc and ineffective measures of cost-containment.[40]

For these and many other reasons of critical importance to public health services management, the issue of health information generally, and epidemiological information in particular, should be brought higher on the agenda of health management.

Public health services management is about planning, organization, leading, monitoring and control of the same services.[2] Any public health plan must have a scientific basis. In order to achieve rational planning of public health services in the province, adequate, up to date, accurate information must be available, as a planning tool. Health information is one of key resources and an essential element in health services management. It is a powerful tool by which to assess health needs, to measure health status of the population and most importantly, to decide how resources should be deployed.[5]

Trends in the health status of the population are suggested by the White Paper for transformation of Health Services (White Paper), to be important indicators of the success of the Reconstruction and Development Programme (RDP), the country's programme of transformation.[37, 39]

It is within that context that the KwaZulu-Natal-Department of Health (KZN-DoH) resolved to establish an Epidemiology/Demographic Unit for the province, to assist management to achieve the department's objectives of providing equitable, effective, efficient and comprehensive health services.[37, 89]

Purpose: To develop a provincial Epidemiological-Demographic Information System (EDIS) that will consistently inform and support rational and realistic management decisions based on accurate, timely, current and comprehensive information, moving the DoH towards evidence based policy and planning.

Objectives :

To provide an EDIS framework to :

    .develop provincial health policy

    .assist management with health services planning and decision-making

    .ensure central co-ordination of health information in order to support delivery of services at all levels of the health system.

    .monitor implementation and evaluation of health programmes

    .ensure utilization of information at the point of collection, for local planning and intervention.

Methods :

A rapid appraisal of the existing Health Information System (HIS) in the province was conducted from the sub-departments of the DoH and randomly selected institutions.

A cross-sectional study involving retrospective review of records from selected hospitals, clinics and other sources, was conducted. The study period was the period between January 1998 to December 1998.

Capacity at district and regional levels on managing health information and epidemiological information in particular, was reviewed and established through training programmes.

Results :

The rapid appraisal of existing HIS in the province revealed a relatively electronically well resourced sub-department of Informatics within the KZN-DoH, with a potential to provide quality and timely data. However, a lot of data was collected from both clinics and hospitals but not analyzed nor utilized. Some critical data was captured and analyzed nationally. There was lack of clarity between the Informatics Department staff responsible for collecting and processing provincial data and top management with regards each other's needs.

Demographics:

The demographic composition and distribution profile of the KZN population showed features of a third world country for Blacks with the White population displaying contrasting first world characteristics.

Socio-Economic Profile:

The majority of the population was unemployed, poor, illiterate, economically inactive, and earning very low income.

The water supply, housing and toilet facilities seemed adequate, but in the absence of data on urban/rural distinction, this finding needs to be interpreted with caution

Epidemiology:

All basic indicators of socio-economic status (infant, child, neonatal mortality rates) were high and this province had the second poorest of the same indicators in the country.

Adult and child morbidity and mortality profiles of the province, both at clinics and district hospitals were mainly from preventable conditions.

Indicators on women and maternal health were consistent with the socio-economic status of this province; and maternal mortality rate was high with causes of mortality that were mainly preventable.

The issue of HIV/AIDS complications remains unquantifiable with the limited data available. HIV is a serious epidemic in KZN and this province continues to lead all the provinces in the country, a prevalence of 32 % in 1999.[86]

Health Services Provision:

Immunization coverage was almost 50% below the national target and drop out rate was very high.

Terminations of Pregnancies (TOP) occurred mainly among adult, single women, and the procedure done within the first trimester and requested for social and economic reasons.

Provincial clinics (mainly fixed) and hospitals provide family planning and Ante Natal Care (ANC) services to the majority of pregnant women in the province.

Conclusion :

KZN is a poor province with an epidemiological profile of a country in transition but predominantly preventable health conditions.

The province has a potential for producing high quality health information required for management, planning and decision making.

It is recommended that management redirects resources towards improving PHC services. Establishment of an Epidemiology Unit would facilitate the DoH's health services reforms, through provision of comprehensive, accurate, timely and relevant health information.

CHAPTER 1 : INTRODUCTION

1.1 GENERAL INTRODUCTION :

Lack of and/or inadequate data for health policy, planning and health services development in South Africa (SA) remains a big challenge to health policy makers in the country. The consequences of this historical policy formulation in the absence of good quality data, especially within a context of gross inefficiencies, is very evident in SA.

This study attempts to address this problem through a review of routinely available data in the province of KwaZulu-Natal (KZN). The study specifically attempts to shift the paradigm from the traditional focus of health information systems on **health service indicators** to **health status indicators**. This shift is viewed as very critical in the context of inefficient and inequitable health service delivery that was historically based on health service indicators. The study was commissioned by the KZN-DoH with the primary objectives of :

- providing frameworks for developing provincial health policy, based on the principles of equity, comprehensiveness, effectiveness, efficiency, good quality etc.;
- assisting management with health services planning and decision making tools, and
- provision of information necessary for monitoring and evaluating health programmes.

These objectives are to be achieved through a process of development of an Epidemiological/Demographic Information System (EDIS), in which these health status indicators are to be developed and measured. However, before these indicators are developed, it is necessary that the provincial profile is determined, such that appropriate and relevant indicators are developed.

1.2 LITERATURE REVIEW

1.2.1 INTERNATIONAL PERSPECTIVE:

"The collection of information is viewed by some planners as a mechanical process involving statisticians, accountants and records clerks; a rather tedious and marginal activity as far as the real work of planning is concerned. Such a view is not only unsustainable but also foolish, if planning is to achieve its purpose of implementing changes."[1]

WHY IS INFORMATION IMPORTANT:

An essential, though perhaps obvious point to make is that health information is the lifeblood of the planning process. Without information it is very difficult to make realistic, rational decisions. Green emphasizes the point that information is power, and that a planner with a confident grasp of information is in a strong position to convince others of his/her decisions.[1]

Information has always been an integral part of every manager's job. Its importance however, and therefore the need to manage it, continues to grow with the corresponding growth of the organization. Indeed it can be conceptualised that management itself is a series of steps involving reception, processing and dissemination of information. A key aspect of information processing activity is differentiating between data and information. According to

Griffin, data are raw figures and facts reflecting a single aspect of reality, whereas, information is data presented in a way or form that has meaning. Information is only regarded as useful and good if it is accurate, timely, complete and relevant.[2]

However, while information is a necessary prerequisite for planning decisions, it can also equally be used as an excuse for not planning.

All too often an argument is made for not taking a difficult decision because of the 'apparent lack of sufficiently accurate' amount of information. This "paralysis by analysis" phenomenon might be a result of genuine desire to perfection; or can be a blocking device by an individual or group resisting change. Information is rarely, if ever, completely accurate.[1]

Often lack of information is quoted as a reason for inadequacies in management and, in some cases as the result of them. While information is an essential ingredient of management methods, a great deal of effort can be wasted if the collection of statistics gets too far out of step with the purposes for which they are required. The appetite for more and more detailed information can be insatiable. Hilleboe et. al. suggest a need to discuss minimum requirements for management information, bearing in mind that, needs for practical management purposes and for research purposes do not always coincide. [3,4]

An information system is essential for identification and clear definition of problems; for design of intervention strategies; for sound decision-making; for monitoring changes; and for evaluating outcomes.[5]

A WHO Expert Committee on National Health Planning in Developing Countries[6] pointed out in 1967, that health planning is an integral part of general socio-economic planning; that the process varies from country to country and in the same country at different times. A government's interest in health planning should be clearly indicated and an enabling legislation is desirable for both planning and subsequent implementation. The planning should be established at the policy-making and decision-making level and administrative capacity is essential because so many plans fail for administrative reasons.

If planning is to be complete and effective, the required data must be available, relevant, accurate and correctly selected; choices must be made among the alternative actions and, projected actions must be understood and accepted by those who must carry them out.[7]

It cannot however, be stated categorically that systematic planning is better than pragmatic planning. To obtain political support for a plan's implementation may require some pragmatism. A moderately good plan, implemented, is far superior to a perfect plan gathering dust on a shelf. Again it is not practical to adopt in its entirety the most scientific approach for determining health priorities. The problem is to determine what pragmatic planning can do best, and what non-pragmatic planning can do best and create an optimum mix. But, all public health plans must have a scientific basis. [8,9]

Because of the complexities in ensuring accurate, timely and relevant data collection, the trend internationally is towards decentralised information systems and SA is no exception to this rule. This is a very important principle in achieving not only these objectives but also in ensuring ownership and utilisation of information at local level. In Russia, similar health status profile studies were conducted in each town, such that the biases created by economic and geographic differences were corrected. Data on demographic and morbidity profile, together with information on hospital admissions and attendances at outpatients and clinics was collected to serve as a basis in drawing of design standards for the public health requirements for different types of medical care.[10, 11] Methods for studying overall morbidity in the Soviet Union were worked out so that it became possible to assess the determinants of ill health of the population. These determinants were used for calculating design standards for

curative and preventive care. On the basis of these, future staff requirements were calculated.[12,13] Health services managers were thus able to plan appropriate services for different population groups based on the developed design standards.

Most managers in organisations invest in information systems because it is assumed that organisations would be more effective and efficient. However some are reluctant to, because of the enormous costs involved initially. According to Normand, these managers contradict the very economic theory of demand and supply which sees technical investment and technological advancement as a source of lowering costs and improving services within a budget.[14]

The first step in creating a HIS is to determine the information needs of the organisation and establish goals for what is to be achieved with the proposed system. Full support with appropriate financial commitment from top management is necessary for successful implementation of the project. Other tasks which can be carried out simultaneously or in succession, include assembling the data base, acquiring equipment (hardware and software), integration and documentation of the system and training on how to use the system.

PROBLEMS WITH EPIDEMIOLOGICAL DATA:

A concern with epidemiological and demographic information is a concern about the health status of the population and, invariably the question of what determines the health of the population. This simple but critical question is by no means easy to answer, because investment in health research has largely been biomedical, looking at how to improve treatment of particular diseases in individuals rather than how to improve health of the whole populations. As a result, much is known about diseases but far too little about health. This then brings to the fore the question of what is meant by 'health'. The World Health Organisation (WHO) definition of health as 'a state of complete physical, mental and social well being and not merely the absence of disease and infirmity' is being challenged by the young generation of health workers as rhetoric, giving no indication of how health can be measured. Questions are raised on what is physical well being, who is to determine it – the patient or the doctor ? How can mental well-being be measured, let alone social well-being.[15]

Available data on health are measures of ill-health rather than health. The only reliable data are of deaths in those countries where these are accurately recorded and demographic data for the deceased person are available. The concept of morbidity is much more difficult for the following reasons :

- there are many conditions which are very real to the patient but for which clinical evidence is lacking, such as some forms of mental illnesses,
- in almost all societies, not all health problems lead to a visit to a health centre. Most cases are treated at home with or without a visit to a pharmacist. Some cases go to alternative healers,
- feeling unwell is not the only reason for visiting a health centre. If time off work with full pay depends on a certificate of incapacity issued by a doctor, there are many who would abuse the system as the British Medical Association once put it, 'in most cases the doctor does no more than countersign the patient's declaration of his/her unfitness to work'[16]

If morbidity data is problematic as explained above, the alternative would then be to measure mortality, which could then be correlated with morbidity over a wide area.

Epidemiological Determinants of Ill-Health: Relationship with Social Development.
Life expectancy is commonly used in most European countries as an indicator of the population's health status. When the process of extending life expectancy was examined, it was observed that major reductions in mortality occurred at the earlier ages. McKeown showed that the decline in mortality in Britain between 1851 and 1900 was entirely due to reductions in death from infectious diseases, and that five groups of diseases accounted for the decline, TB, typhus, typhoid, cholera and dysentery and small pox.[17]
The question was why did this occur. It could not have been because of increased doctor population ratio, as Loudon argued, there was already one doctor to less than a thousand population in 1851.[18] It was not due to hospital development as Ayers proved in his study.[19] It was not developments in medical knowledge, as McKeown showed that the impact of antibiotics on infectious disease was long after major reduction in mortality had occurred. The introduction of specific preventive actions like vaccines was also long after mortality reductions had occurred.[20]
It could not be because of personal hygiene, as soap was considered a luxury in the early nineteenth century and was heavily taxed. McKeown argued that the abolition of luxury tax on soap could only affect incidence of typhus but not much else. He also suggested that the introduction of safe water and sanitation or sanitary reforms were only responsible for about a quarter of the decline in mortality[20] He then concluded that the major factor, other than water and sanitation, accounting for about half the decline in mortality, was improvement in living standards and particularly nutrition. This analysis is of important relevance to SA, because for effective interventions, the determinants of ill-health based on accurate epidemiological data linked to the target population, need to be known. The conclusion about the improving living standards as the major intervention strategy is of significant implications to policy makers of this country. It is also very important to state that there are many variables that policy makers have to consider when deciding on effective intervention strategies. As an illustration of this, even high income countries do not necessarily have the best health indicators. There is evidence to suggest for instance that the impact of income on health, gradually declines as countries move from lower to higher levels of income.[21] This is the phenomenon explained by economists as resulting from diminishing scales of return. Moreover, the more unequal the distribution of income within a country, the greater the inequalities in health, a phenomenon that is highly prevalent in SA. Correlations between countries suggest that infant mortality rates tend to be higher where the distribution of income is more unequal. Cuba is one of those countries with least income inequalities and infant mortality rate in Cuba is low, 6.5 per 1000 live births in 2000 (Director of health services in Cuba – presentation at the International Society on Equity in June 2000) On the contrary, SA is rated as one of the most unequal countries in terms of income distribution, as per SA's Gini co-efficient, and infant mortality rate in this country is very high. (Prof. J. Le Grand, economist, University of London – personal communication).

Based on McKeown's analysis and conclusions, a question is raised on the wisdom of developing countries spending half or more of their health resources on hospitals (SA is spending 70% of its budget on hospital care) when about a quarter of Africa lack sufficient protein, and even urban provision of safe water and sanitation is far from adequate. The situation is made worse, according to Cumper, by internal migration of populations, particularly to the cities, leading to spread of infectious diseases and the formidable problem of water and sanitation, as cities grow and shanty towns surrounding them.[22]

A study commissioned by the Rockefeller Foundation in the mid 1980s of five outlying countries which appeared to have higher life expectancies than would have been expected from their level of economic development (China, Costa Rica, Cuba, Kerala State in India and Sri Lanka)[23] found that emphasis on nutrition through land reforms, well developed primary education with emphasis on females, above average equality of income, priority given to health, community participation and well developed rural health care; were the factors responsible for these countries' better health status indicators.

Another study by Halstead et al, compared two states in India, Kerala and a substantially richer West Bengal.[23] Both life expectancy and infant mortality rates were found to be much better in poorer Kerala.

Conclusions were that the effects of a low average per capita income can be offset by other factors favourable to health, and focussed on three factors:

- Firstly, the average per capita income is a poor indicator. What is more important is the distribution of income, as this is likely to affect the poorest people.
- Secondly, health promoting behaviors such as the practice of boiling water can be significant.
- Thirdly, education and particularly female education is an important variable which even McKeown's analysis neglected.

Another country studied was Tanzania. Though this country is among the poorest African countries, it has the third lowest infant mortality for sub-Saharan Africa. By the early 1980s it had 98% school enrolment at the primary stage with 95% female enrolment. By the end of 1970s, 70% of the population was within 5 kilometres of a health institution. Where the health situation was below the average, this was associated with lower maternal literacy, poor water supply and lower levels of immunisations.[24]

The issue of women's health and education is an important one. A study of 99 developing countries showed that poor countries which had given priority to investment in education had lower infant mortality rates and longer life expectancy than countries with less educated populations and higher per capita income. Trends in thirteen African countries between 1975 and 1985 showed that a 10% increase in female literacy, reduced child mortality by 10%, while change in male literacy showed little effect.[24] Surveys in 25 developing countries showed that even one to three years of maternal schooling was enough to reduce child mortality by about 15%.[25] Oakley further showed that in the interwar period, maternal mortality obstinately refused to be reduced by the introduction of antenatal care, but finally responded to the improvement of living standards, education, equality and employment.[26] Education improves a woman's capacity for self-care and maintenance of good health during pregnancy, it enables her to acquire greater knowledge and learn better child-care practices. Education gives her confidence and the receptivity to benefit from child-care services and understand the advice given by trained personnel.

The emphasis given to income and its distribution, to water, sanitation, education and lifestyle could imply that health care is of negligible importance. A study of 10 primary care projects led to the conclusion that 'well designed and carefully implemented interventions can reduce infant and child mortality by as much as one half within five years at a cost below 2 % of per capita income.[27]

HEALTH AND DEVELOPMENT:

When the health status of countries at different levels of development is examined, it appears according to Frenk, that countries go through three stages of health development, the epidemiological transition.[28]

- Low income countries are characterised by high morbidity and high premature mortality rates, in both cases mainly from infectious diseases.
- Middle income countries have much lower mortality from infectious diseases but still have high morbidity from a similar pattern of diseases. What actually changed is that these diseases do not lead to the same level of mortality. With the decline in infectious diseases there is generally a decline in fertility.
- High income countries have much lower mortality from infectious diseases.

Classifying countries into these three groups does however, distort the picture as some countries have a mixture of both features. The demographic effects are the transition from a society with a large proportion of children to a society with a high proportion of population in the middle and old age cohort. One effect of transition is a reduction of the birth rate. In many developed countries it has fallen to below the level needed to maintain the number of the population in the long run. But it does not inevitably follow that better child survival will lower the birth rate. There is as yet, little sign of this happening in most countries of sub-Saharan Africa. Thus, countries can be faced with a 'demographic trap' – high birth rate, low mortality rates of children and insufficient increases in income to raise average living standards. Such is the situation of Bangladesh which faces the prospect, in a generation's time, of a population as large as that of the United States with a land area no larger than the State of Carolina.[29] Rapid population growth without corresponding economic growth, may lead to declining per capita income and to reduced ability of the country to finance education, health services and provision of safe water and sanitation.

HEALTH AND EQUITY:

In SA one cannot completely discuss determinants of health without making reference to equity issues. This is particularly so because much of the disparities in health indicators within one country are a result of the inequalities of the past. Whitehead defines inequities in health as 'differences which are unnecessary, avoidable and judged to be unjust and unfair'.[30] Inequities in health can be looked at in a variety of ways like differences between geographical areas, different ethnic groups, occupation, educational level, income, gender etc. There are vast differences in health status between developed and developing countries. The death rate among children 1-4 years of age is around 20 per 1 000 in sub-Saharan Africa whereas it is 1 per 1 000 in developed countries. Of the 20 million children born with low birth weight in 1985, 13 million were in South Asia and 3 million in Africa.[31]

The high death rate among the very young in developing countries is from diseases that have almost disappeared or been brought under control in developed countries. The main causes are communicable diseases transmitted by human contact, insects, water or inadequate sanitation.[31] Despite the problems of poor data in developing countries, it is still possible to find some comparisons between regions or groups. For example, it was found in Zimbabwe in 1980 that infant mortality rate was 14 among Whites and between 30 and 50 among Blacks per 1 000.[32] In South Africa, the African infant mortality rate was between 94 and 124 per 1 000 live births between 1981-85; the corresponding rates for Indians and Whites were 18 and 12.[33]

Differences based on gender are particularly interesting. The obvious explanation for male/female differences is genetic, but environment can clearly be very important. In India and Papua New Guinea, men live longer than women. Part of the reason is high maternal

mortality. One study estimated that half of the difference in survival rates in the United Kingdom can be explained through behaviours such as cigarette smoking, alcohol consumption and occupational hazards.[35] Another study showed that in Kibbutz life, in Israel, where there is less difference in gender roles and a similar environment, the male/female gap in life expectancy is about half what would be expected due to higher male life expectancy.[36]

In conclusion :
It is very important that policy makers are appraised of the importance of utilising health status indicators as opposed to the traditional health service indicators. It is equally important to note that developing health status indicators requires extensive collection of epidemiological and demographic data. A lot can be learnt from experiences of other countries as was the case from the above literature search.

1.2.2 SOUTH AFRICAN PERSPECTIVE :

In 1996 the SA Department of Health made a policy statement through the White Paper for Transformation of Health Services (White Paper)[37] committing itself to decentralizing management of health services with particular reference to District Health System (DHS)[38] and development of national HIS that would facilitate health services planning and management.

Decentralised management in the DoH implies that provincial departments should have provincial policies in place, and these policies be within the national legislative and policy frameworks. The White Paper further suggests that trends in health status are amongst the most important indicators of success of the Reconstruction and Development Programme (RDP), a vehicle for socio-economic transformation in SA, whose health objectives are in full accordance with the principles of the White Paper.[37,39]

The principle of decentralization is a very important and crucial one in SA. This was clearly stated in many policy documents that were produced since 1994, as a critical programme of ensuring comprehensive and equitable accessibility to health services, by all citizens of this country. Decentralisation is particularly important for health information systems in a country like SA with gross residual inequities and in which, therefore, health status indicators and priorities, enormously vary from one district to another, depending on the main population group, prevailing social economic and environmental conditions and other special risk factors.

1.2.3 PROBLEM STATEMENT :

Lack of reliable health information is one of the major obstacles to effective planning of health services in SA. Analysis of the 1994 status of health information systems in South Africa conducted by the National Health Information System for SA (NHISSA) Committee, found the existing information systems to be fragmented, incompatible, uncoordinated and not comprehensive; software and hardware were incompatible and not user friendly, systems manually driven, and most importantly there was inadequate analysis, interpretation and use of data at local level.[40]

The use of demographic and epidemiological data for health services planning and interventions is well documented.[41,42,43,44] Epidemiological evaluation of existing services provides a rational basis for setting priorities and allocating scarce resources. This is done through a process of analysing resources and processes in service delivery compared with the outcomes of the system. It is therefore a contribution to the planning and reorganisation of existing and future health resources.

A very fundamental distinction must be made between health services planning and hospital services planning. Traditionally, the latter has dominated health planning. Within the context of the National Health Plan (NHP) and its proposed Primary Health Care (PHC) approach, a paradigm shift needs to be adopted, to put more emphasis on district based health services planning, not dominated by hospital planning.[45]

Morbidity and mortality data have traditionally been used in determining populations health status, health care needs and resource allocation. A common concern which van Rensberg, Bradshaw and Allen also allude to, is about accuracy of data, related to under reporting and under registering.[46,47,48] Added to this concern is the lack of community involvement in data-based methods of determining priorities.

Planning health services requires a balance between objective criteria (such as epidemiological and demographic profiles) and subjective factors such as perceived and unmet needs, demands and requirements of the various role players, including the community, who would influence policy decisions. Increasingly the term "perceived need" is used, in recognition of the differences between perceptions of the medical profession, the community and other role players.

Caution is also raised against relying only on existing statistics and anticipated population changes, to project future requirements. Allen cautions that such an approach may perpetuate existing inequalities in health care.[48]

1.3 PURPOSE AND OBJECTIVES

PURPOSE:

To develop an Epidemiological-Demographic Information System (EDIS) that will consistently inform and support rational and realistic management decisions, based on accurate, timely, current and comprehensive scientific information, moving the DoH towards evidence based policy and planning.

OBJECTIVES:

To provide an EDIS framework to

a)   inform provincial health policy development.

b)   assist management with health services planning and decision making

c)   monitor implementation and evaluation of health programmes.

d)   ensure utilisation of information at the point of collection, for local planning and intervention

1.4 DEFINITIONS

Health Information System : All inputs (staff, finance and equipment, information) that are utilised to collect, and process data from various sources to produce the required information for management. (Fig 1)

Health Information Sub-Department (Informatics) : a sub unit of the DOH that captures, collates, stores and manages data in the province.

Health Status Indicators : mortality, morbidity, disability, nutrition, antenatal care, family planning and immunizations

Demographic Profile : population size, composition and distribution

Demographic Data : Data on population size, composition and distribution ; births and deaths and the individual social and economic attributes that modify or further characterise birth and deaths.

Epidemiological Data : Disease specific data, their determinants and their social and economic antecedents.

Socio - Economic Indicators : education, literacy, occupation, income and employment

Environmental Health Indicators : access to water, sanitation; housing, refuse removal.

Performance Indicators : Immunizations, Family Planning, Termination of Pregnancy, Ante Natal Care.

Capacity Building : Develop skills at regional, district and institutional levels, on how to process interprete and utilize data for local planning and decision making.

KZN-DoH : The Department of Health within the province of KwaZulu-Natal.

CHAPTER 2 : METHODOLOGY

2.1 ETHICAL APPROVAL/AUTHORISATION :

The Secretary for Health of the KZN-DoH commissioned this study and gave permission to access all data at provincial and institutional level, in an aggregated form. No individual patient records were used. The protocol for the study was approved by the Ethics and Higher Degrees Committee of the Faculty of Medicine, University of Natal.

2.2 MATERIALS AND METHOD :

In order to fulfil the objectives of this study the following tasks were undertaken :

A) Rapid Appraisal :

A rapid appraisal of the existing HIS in the province was conducted in order to provide a baseline for implementation of the programme and to identify existing problems and areas that need improvement or modification. This was conducted through interviews with key informants in the DoH, local authorities, laboratory services and academics. Existing records and reports were reviewed and walk through the different departments undertaken. A systems model (Inputs, Process, Outputs, Outcomes) of evaluation was used.

Data on human, physical, information and other resources utilized, was collected. The process of data collection at institutions was noted. The reports or bulletins that were produced were investigated and their effect in assisting health services decisions investigated. The dynamics of relations between Informatics and management were also studied.

B) Review of the Epidemiological and Demographic profile :

The epidemiological and demographic profile of the population of the province was assessed from health status, demographic, socio-economic and environmental health indicators

A cross-sectional study was conducted through retrospective review of hospital, clinic and all other records from different sources. The study period was the period between January 1998 to December 1998.

Figure 2 below is a summary of collected data and the sources.

Fig 1: Analysis of Current Epidemiological / Demographic Profile.

DATA TYPE	DATA SOURCE
Health Status Indicators	
Maternal Mortality Rate	NCCEMD
NNMR/PNMR/IMR/<5MR	SADHS, Hospitals &Clinics
Morbidity :	
Hopital/Clinic morbidity	Cross-sectional study
Notifiable conditions	Provincial HIS
Termination of Pregnancy	Provincial HIS
HIV/AIDS	Virology Department
Diarrhoeal Diseases	SADHS
Occupational Diseases	Compensation commissioner
Domestic and Child Abuse	CPU/SA NCCFW
Disability	CSS
Demographic profile	**CSS**
Socio-Economic Indicators	**CSS**
Literacy	
Occupation	
Income	
Unemployment rate	
Poverty	
Environmental Health Indicators	**CSS**
Access to water	
Sanitation	
Housing	
Refuse removal	
Performance Indicators	**Provincial HIS**
ANC attendance	
Family planning	
Immunizations	

The demographic profile, socio-economic and environmental health indicator data was obtained from the Census 1996 data.

The current morbidity and mortality profile was established through records review from randomly selected district hospitals (one from each region) and randomly selected clinics (one clinic per district).
In addition, mortality and births data were obtained from vital registration from the Department of Home Affairs.
Maternal mortality data was accessed from the surveillance data by the Maternal Child and Women's Health Directorate.
Data on disability was also obtained from the Census 1996 data.
The Compensation Commissioner's office provided data on Occupational Diseases and Injuries.
The Child Protection Unit (CPU) and the SA National Council for Child and Family Welfare provided data on domestic and child abuse.
Informatics provided data on performance indicators, primary medical care, notifiable medical conditions and the termination of pregnancies.

Information on HIV/AIDS was accessed from the Virology Department of the University of Natal.

2.3 REDUCTION OF BIAS

During conduction of the study, bias was reduced to a minimum through strict adherence to the protocol.

Results of interviews were cross - validated between the key informants.

The selection of hospitals and clinics for investigation was random.

2.4 LIMITATIONS

Time was a major constraint, limiting the investigation to only interviews, walk through and superficial records review and access to the private sector and local authority information was limited.

The provincial Laboratory Services did not collect data on disease diagnosis, which would have been very useful in validating notifications and other laboratory diagnosed infections at institutions.

The study was based on institutional data as there were no resources to conduct community surveys.

At the Hospitals:
- Data was available in an uncoordinated and non standardized manner with no individual responsible for information.
- Patients with multiple diagnosis only recorded as one diagnosis, implying under-reporting of other conditions.
- At out-patients departments, diagnoses were not recorded.

At the Clinics:
1. The clinic registers contained diagnoses that were not collated into monthly frequencies.
2. The diagnoses were not standardized between different clinics and were based on nurses' clinical judgement.
3. Some clinics failed to provide the data in time and were excluded from the study.
4. There was no age breakdown of the data, thus disaggregation of findings between adult and children was not possible.
5. There was no indication of whether the reported cases were incident or repeats.

The demographic data, mortality causes in particular, was collected and sent to the national office of the DoH, making access to this data difficult, due to certain rules and regulations set out by the same department. Assurance was given for availability of this data in future. For the study institutional and census data was used

Due to underreporting, data on notifiable medical conditions was found to be inadequate.

Termination of Pregnancy data was incomplete because many institutions performing TOPs did not submit the required data; and data from the private sector was not available.

The HIV/AIDS data submitted by institutions to the Informatics was poor, incomplete and inaccurate, hence data from the Virology Department was chosen for the study..

The AnteNatal Care (ANC) surveillance data was based on only patients attending public health facilities, to the exclusion of those attending private facilities. Data on the prevalence amongst men was also not available.

Data on occupational diseases and injuries exists only in the Department of Labour nationally. The same data was not disaggregated to provinces making it difficult to estimate the extent of the problem provincially.

Child and other abuses data was fragmentally collcctcd by different organisations and departments making it very difficult to consolidate and accurately quantify the problem.

Detailed information on individual inpatients (including coded diagnosis) exists, but not collated, because of the type of computer software used. The outpatients department was only limited to patient details, without diagnosis. Even with the inpatient system, problems were identified including the coding system used (ICD 9), the staff were not prepared to change to the ICD 10. Not all patient records from the wards reached the registry department and therefore not entered into the system (+- 1000 in 1998 were missing at King Edward V111 hospital for example). Addington Hospital, a regional hospital with relatively more sophisticated information system, could not provide retrospective data on the hospitals morbidity and mortality profile, for reasons almost similar to KEH that the software was not able to produce same, despite the fact that this data like at KEH, was collected.

CHAPTER 3 & 4 : RESULTS

The findings of this study are presented below in accordance with the main objectives :

- Rapid appraisal of the existing HIS
- Epidemiological and Demographic profile from a cross-sectional survey.

CHAPTER 3 : RAPID APPRAISAL OF HIS

3.1 INFORMATICS

Inputs

There were two offices, one in Pietermaritzburg and another in Durban with the following functions :

a) Co-ordination, administration and technical support at Pietermaritzburg head office and

b) Data management and epidemiology services at the Durban office.

At the Durban office six permanent and 2 temporary staff members consisting of :

the head who was a statistician, two nurses assisting the head with supervisory duties and five clerks for data capturing and processing

There were eight computers, 4 printers, a photostat and fax machine available.

Process :

The data captured at this office included

1. GIS maps
2. Monthly hospital statistics
3. Clinic monthly summary register
4. Local Authority
    . Quarterly reports on ANC visits, Child health, PMC, STD's
    . Notifiable medical conditions
5. Immunisations - Drop out rates, Type of vaccine by month
6. Family Planning - acceptors by regions
7. Termination of pregnancy statistics - by institution, age and gestation
8. TB Surveillance statistics
9. AIDS and HIV cases - hospital data by regions.
10. Perinatal and Maternal statistics - live and still births and early neonatal and maternal deaths.
11. Shigella sentinel surveillance
12. Laboratory statistics - no of tests, unit costs and occupancy units.

13. Others : Human Resources and Financial information

In addition to the above, this department was, in collaboration with the Department of Home Affairs and Statistics SA, involved in a process of developing and improving registration of births and deaths (vital statistics).

Outputs:

Bulletins were produced by the Informatics department and distributed to management at all levels in the province including clinics.

Outcomes:

There was minimal feedback to the informatics from the recipients of the bulletins, raising questions amongst the producers of the same, about whether these bulletins are read and used. Equally there was the concern amongst the producers of the reports about the type and detail of information required by managers. The managers on the other hand, found it difficult to interpret the contents of these bulletins and thus not very helpful to them.

3.2   LOCAL AUTHORITIES (LA)

The Pietermaritzburg LA collected data on notifiable medical conditions, clinic register and TB register.

In addition to above, the Durban LA collected environmental data as well as diarrhoeal diseases (Salmonella, Shigella, Cholera) surveillance in collaboration with provincial laboratories.

3.3   PROVINCIAL LABORATORY SERVICES

The provincial laboratory services situated in Durban, in addition to participating in the diarrhoeal disease surveillance as above, also
- did serological tests (syphillis, widal)
- was a provincial quality control laboratory for malaria. The malaria quality   control covered the entire province including the private sector.
- had a public health section, assisting local authorities e.g. in food poisoning

3.4. VIROLOGY DEPARTMENT

This department located at the University of Natal Medical school, had 8 Regional laboratories established, where trained technicians were deployed.

Amongst the activities that this department is involved with were:

Rabies surveillance, Hemorrhage fevers, Hepatitis, HIV/AIDS-ANC surveillance

However, formal linkages and thus information flow between this department and the DOH could not be clarified.

4.5 INSTITUTIONS

According to the Informatics head, all hospitals in KZN were computerized and thus potentially could capture, analyse and interpret data at that level. However, a visit to two hospitals (KEH V111 and Addington) revealed a number of problems, listed under limitations.

The Addington Hospital, widely recognized as having a relatively more sophisticated information system, could not provide retrospective data on the hospitals morbidity and mortality profile, for reasons almost similar to KEH that their software is not able to produce same, despite the fact that this data like at KEH, is collected.

The clinic data collected through a clinic register which was piloted and implemented in the province, was said not to be correctly completed.

3.6 COMMUNICABLE DISEASES CONTROL (CDC)

This office located at the Pietermaritzburg head office, had medium to long-term objectives developed around its surveillance system, in the light of poor CDC information available from the provincial HIS. To this end :

a)A provincial CDC committee was established comprising of the Deputy Director, a technical adviser and 8 regional CDC co-ordinators. The committee's responsibility was to formulate strategies for the CDC surveillance information system.

b)Regional CDC planning workshops were conducted through the province. The aim of these workshops were to improve quality of CDC surveillance.

3.7 OTHER ORGANISATIONAL STRUCTURES :

Health Systems Trust (HST), CHESS, Valley Trust, National Progressive Primary Health Care (NPPHC) and the East Seaboard Academic Tertiary Institutions (ESATI), together with the DoH formed a collaborative

group, aiming to co-ordinate the different organisations' operations in the province.

HST was funded to develop district HIS at Mt Currie, Durban Metro and Ulundi. CHESS was funded to develop the same in the Jozini district.

3.8 NATIONAL HEALTH SYSTEMS RESEARCH AND EPIDEMIOLOGY – Pretoria.

This Directorate, under the Chief Directorate of Health Information Evaluation, Research and Epidemiology, was responsible for – Surveillance, Health Systems Research, Research Co-ordination and Management

The Informatics unit received, collated and analysed, data from the 9 provinces. Monthly reports (Epidemiological Comments, Statistical Notes) were produced and disseminated to the provinces.

The data received included :

-Immunisations - wherein provincial and national coverage was calculated

-TB - Case finding and treatment outcomes assessed

-HIV - from the ante-natal care surveillance

-AIDS - from the voluntary anonymous reports.

-Notifiable Conditions

-Termination of Pregnancy (TOP)

-Maternal Mortality

SUMMARY

This rapid appraisal revealed a relatively well-resourced DoH, in terms of health information technology. However, huge amount of data was collected on a variety of indicators but little was done to analyse and interpret the same data for management use. There were also gaps in the quality of data collected from clinics and hospitals.

CHAPTER 4 : DEMOGRAPHIC, ENVIRONMENTAL and EPIDEMIOLOGICAl PROFILE

4.1 : KZN DEMOGRAPHIC PROFILE
(1996 Census data)

POPULATION and LAND SIZE :

Table 1 : KZN Population and Land size

Land and Population Density	
Area (km2)	92 428
Total Population	8 726 300
Population Density (per sq km	94

The total population of the province of KZN constituteD 21 % of the total population of the republic of SA, and the same population was confined to 8 % of the land area of SA.

DISTRIBUTION AND COMPOSITION :
The majority of KZN population (57 %) lived in rural areas of the province. Like in the rest of the country, Africans were in the majority (82 %), as were female (53 %) over males.
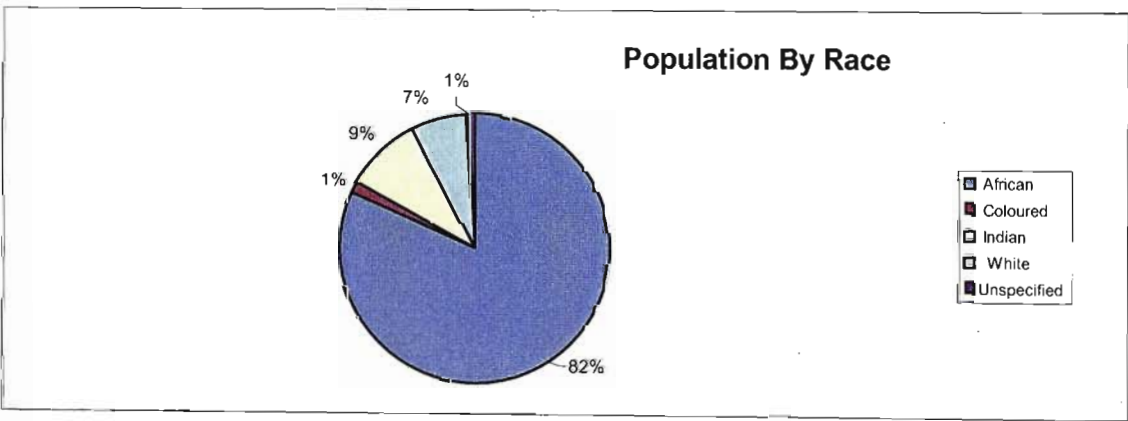

Fig 1 : Racial Composition

The population pyramid was typical of a third world country with a broad base for Africans, Indians and Coloureds but different for Whites.
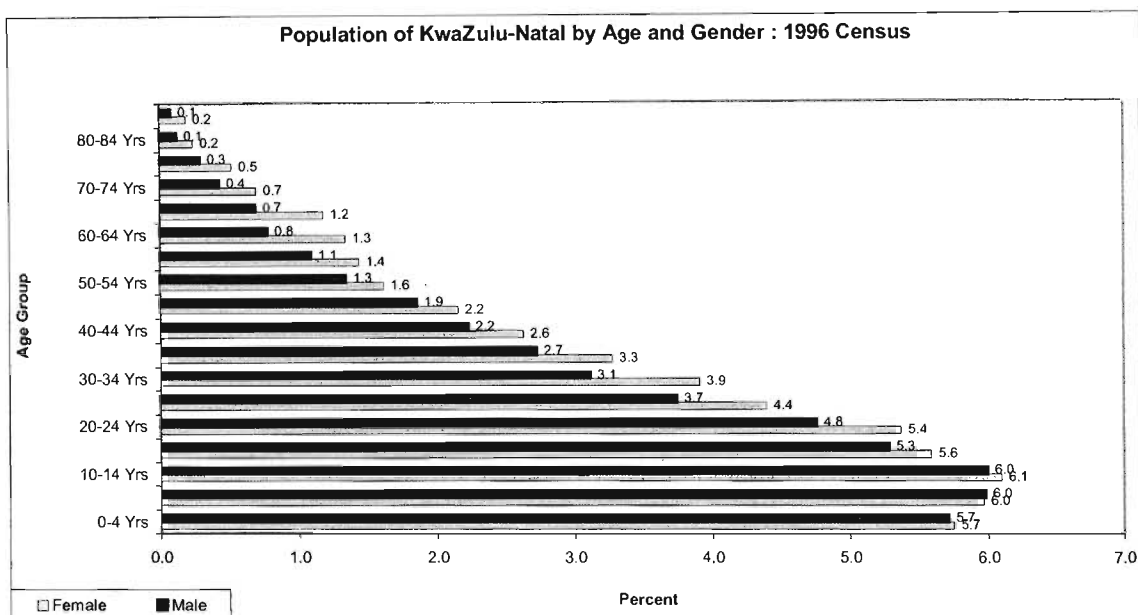
Population of KwaZulu-Natal by Age and Gender : 1996 Census

Fig 2 : Total KZN Age Composition
(Appendix 2 shows the Racial breakdown of the above.)

4.2 KZN – ENVIRONMENTAL PROFILE:

WATER SUPPLY :
Only a minority 34 % do not have access to tap water, although the urban rural distribution of these resources was not clear.

HOUSING :
A majority of the population (80 %) live in formal or traditional housing, while the rest live in shacks or informal housing.

TOILETS :
Seventeen (17) percent of the population do not have hygienic toilet facilities while 83 % use flush, chemical or pit latrines.

4.3 : KZN EPIDEMIOLOGICAL PROFILE

4.3.1 CHILD HEALTH
(Data source : SADHS 1999)

KZN has the :
highest child mortality rate (24%) in the country

28

second highest –
- -- under 5 mortality rate (75%)
- - infant mortality rate (52%)
- - post-neonatal mortality rate (29%)
- - neonatal mortality rate (23%)
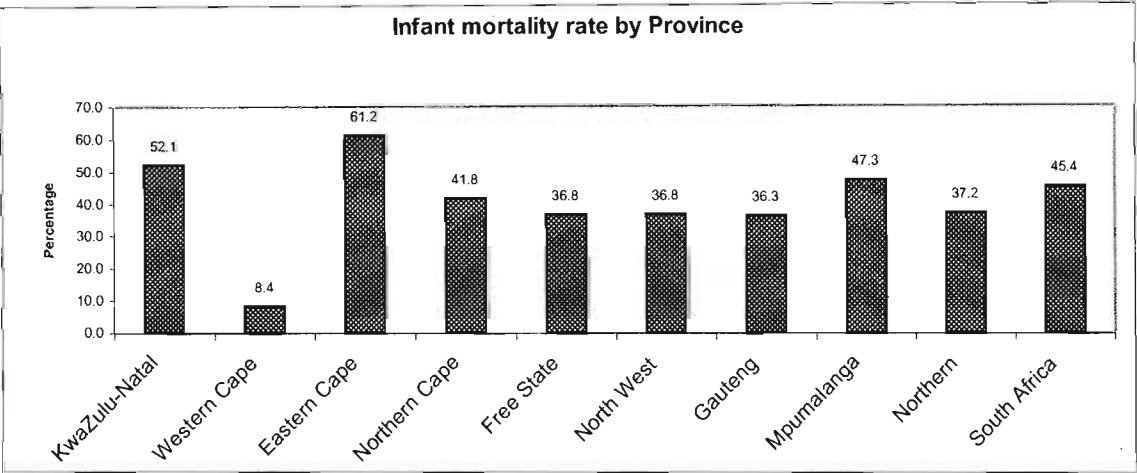
Infant mortality rate by Province

Fig 3 : Infant Mortality Rates in SA

These are children dying before their first birthday. Following on Eastern Cape, a neighbour to KZN, the IMR is very high in KZN.

CHILD ABUSE:

CHILD ABUSE
(MARCH 1997 - APRIL 1998)
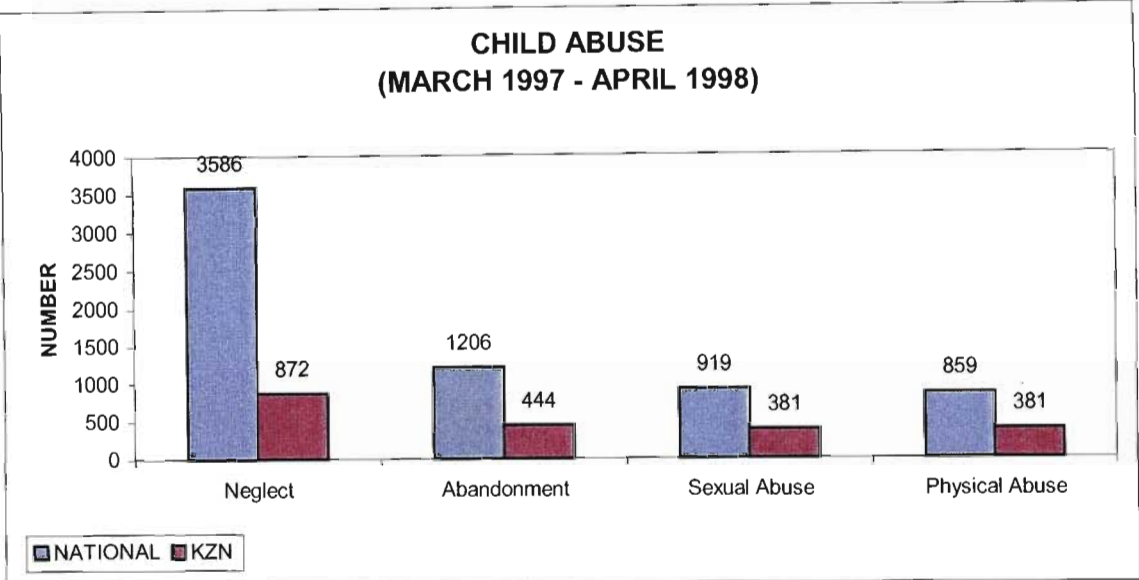
Fig 4 : Child Abuse SA and KZN   (Data Source: National Council of Child Welfare)

Child neglect was apparently a national common problem. These figures include both intentional and non-intentional child neglect.

CHILDHOOD DIARRHOEA

KZN was found to have the highest percentage (18%) of children with diarrhoea in the country, a fact consistent with the findings of this study at institutions. But, in the same province, appropriate treatment was given to a majority (71%) of all children with diarrhoea, highest in the country.
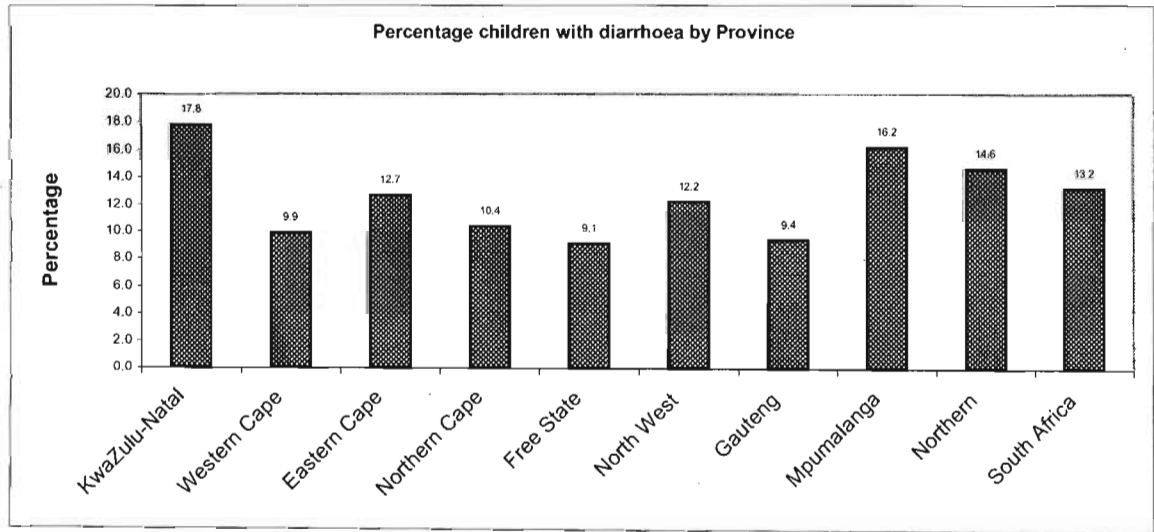
Fig 5 : Prevalence of Diarrhoea amongst Children in SA.
        (Data Source : SADHS 1999)

CHILDHOOD IMMUNISATIONS

30

Percentage Immunisation coverage by Province
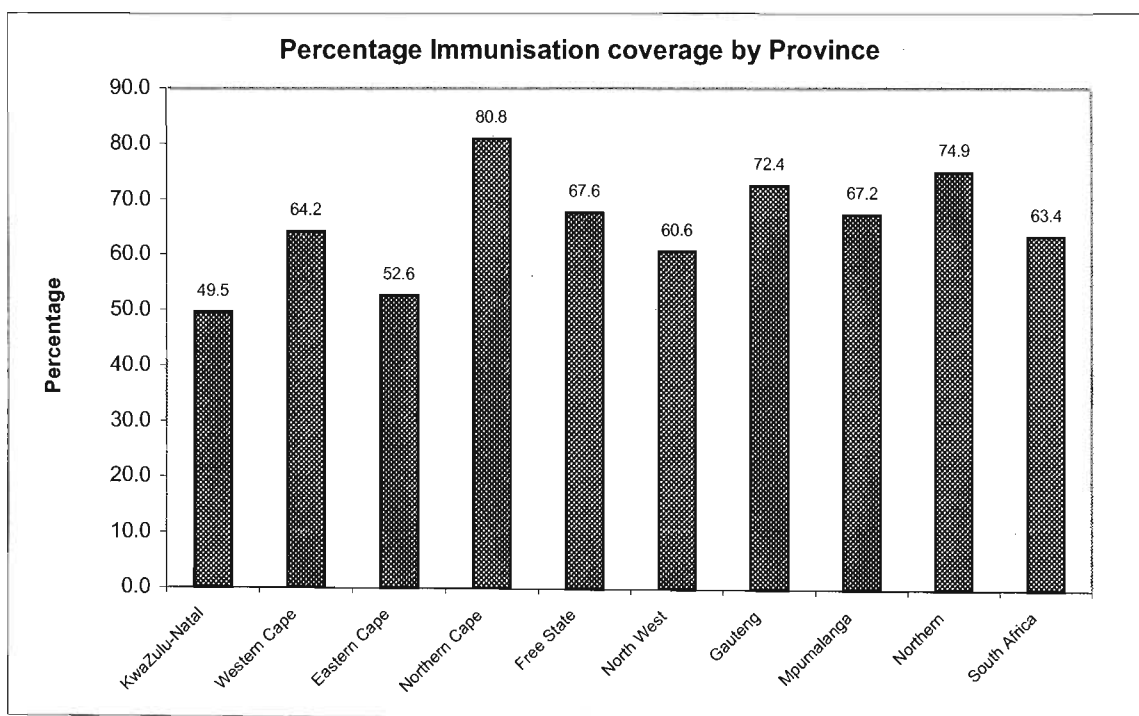
Fig 6 : Immunisation Coverage in SA, by each Province.
(Data source : SADHS 1999)

The immunisation coverage of children in KZN was shockingly lowest at
49,5% while the national coverage was 63 %.

31
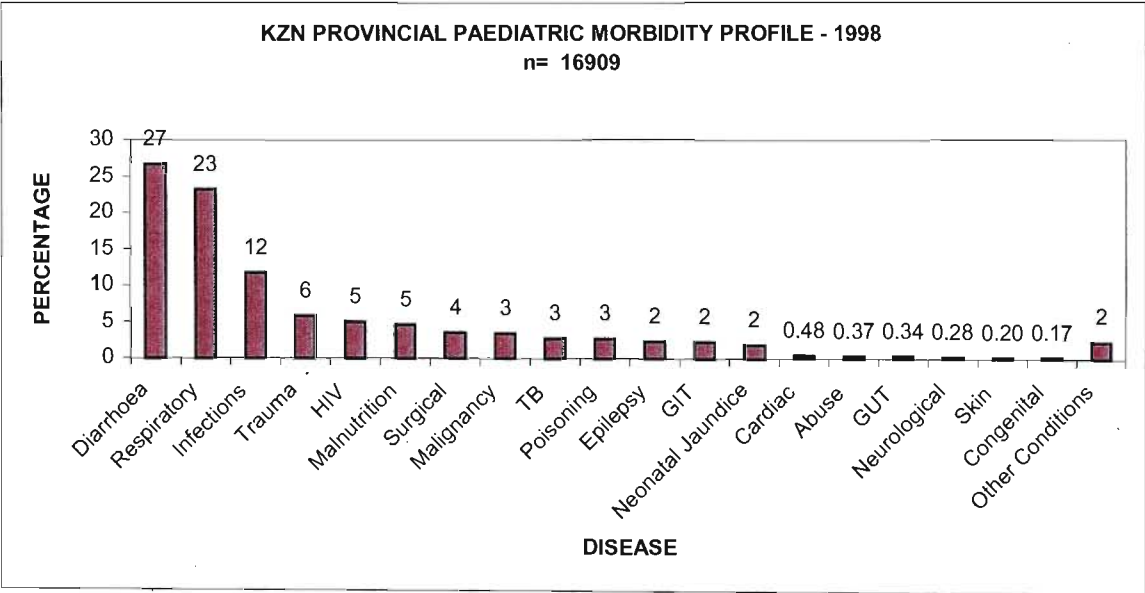
Fig 7: KZN Paediatric Morbidity Profile.
(Data Source :Cross sectional study by Author)

Diarrhoeal Diseases : Commonest cause of paediatric morbidity in the province. It was the commonest cause in four Regions (Port Shepstone, Empangeni, New Castle and Ladysmith). It was the second commonest cause in the rest of the Regions.

Trauma : A leading cause of morbidity among adults is number four commonest cause of morbidity among children.
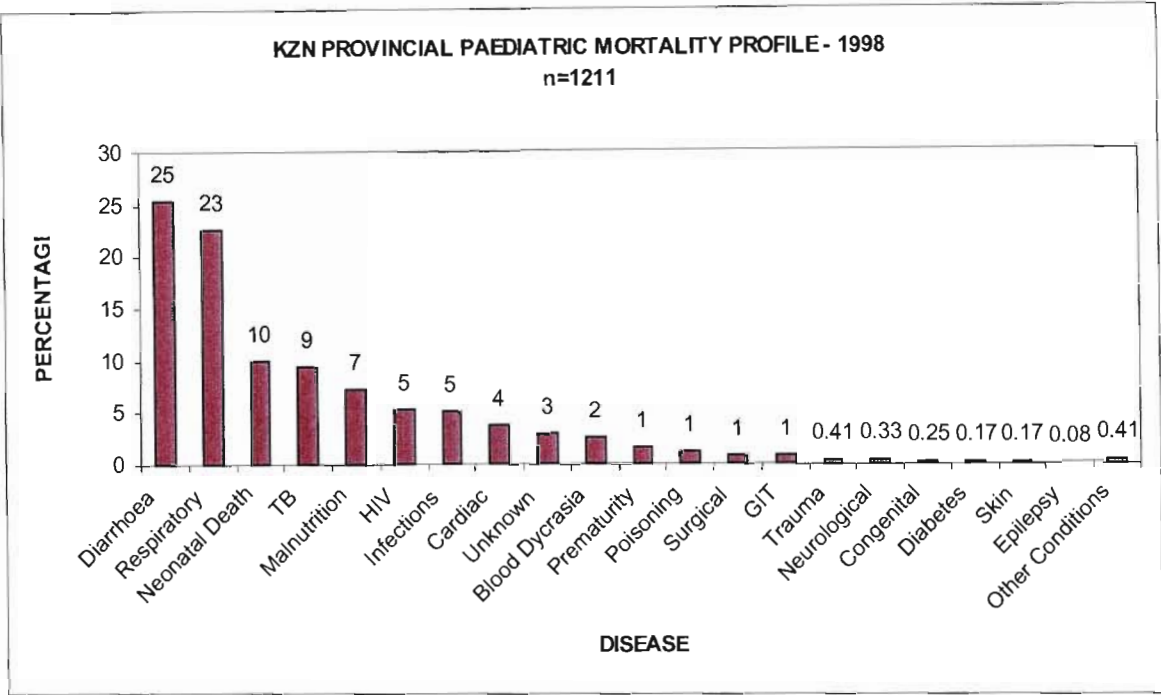
Fig 8 : KZN Paediatric Mortality Profile.
(Data Source : Cross sectional study by Author)

Diarrhoeal Diseases : A leading cause of morbidity was also a leading cause of mortality in the province. The mortality rate from this wasis calculated to be 25 %i.e. for every 100 children admited for diarrhoea, 25 die.

Malnutrition : A sixth commonest morbidity cause was the fifth cause of mortality with a mortality rate of 7 %.

HIV/AIDS : Deaths from this condition were the sixth commonest, with a high mortality rate of 5 %. This figure might be an underestimation however of the real mortality from HIV/AIDS, as this figure reflects only those cases that were tested for HIV, and also that among the other stated conditions, (TB, other respiratory conditions, diarrhoea, malnutrition) HIV/AIDS might be involved. The available data could not provide these details.

4.3.2 ADULT MORBIDITY AND MORTALITY AT INSTITUTIONS

(Data from Cross sectiona study by Author)

PRIMARY CARE MORBIDITY PROFILE:
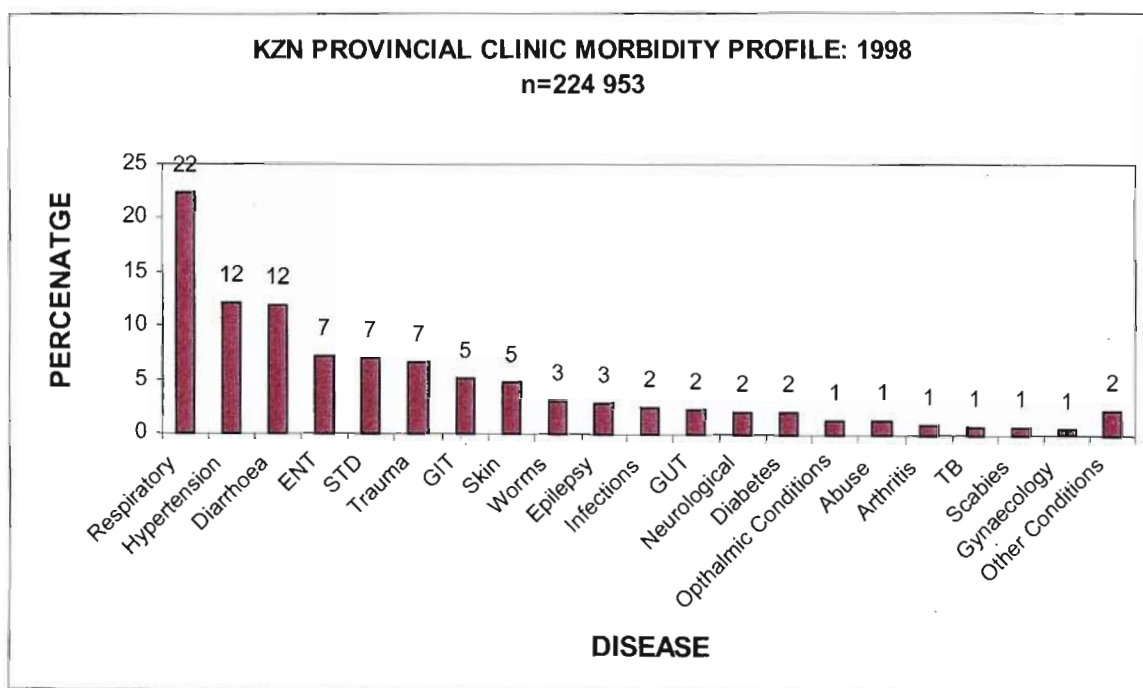
Fig 9 : KZN Primary care morbidity profile.

Respiratory Conditions (URTI, Bronchitis, Pneumonia) : were leading conditions in most regions of the province of KZN except in Pietermaritzburg, Port Shepstone, where hypertension leads. (Appendix 7)

KZN PROVINCIAL ADULT MORBIDITY PROFILE: 1998
n=144 105
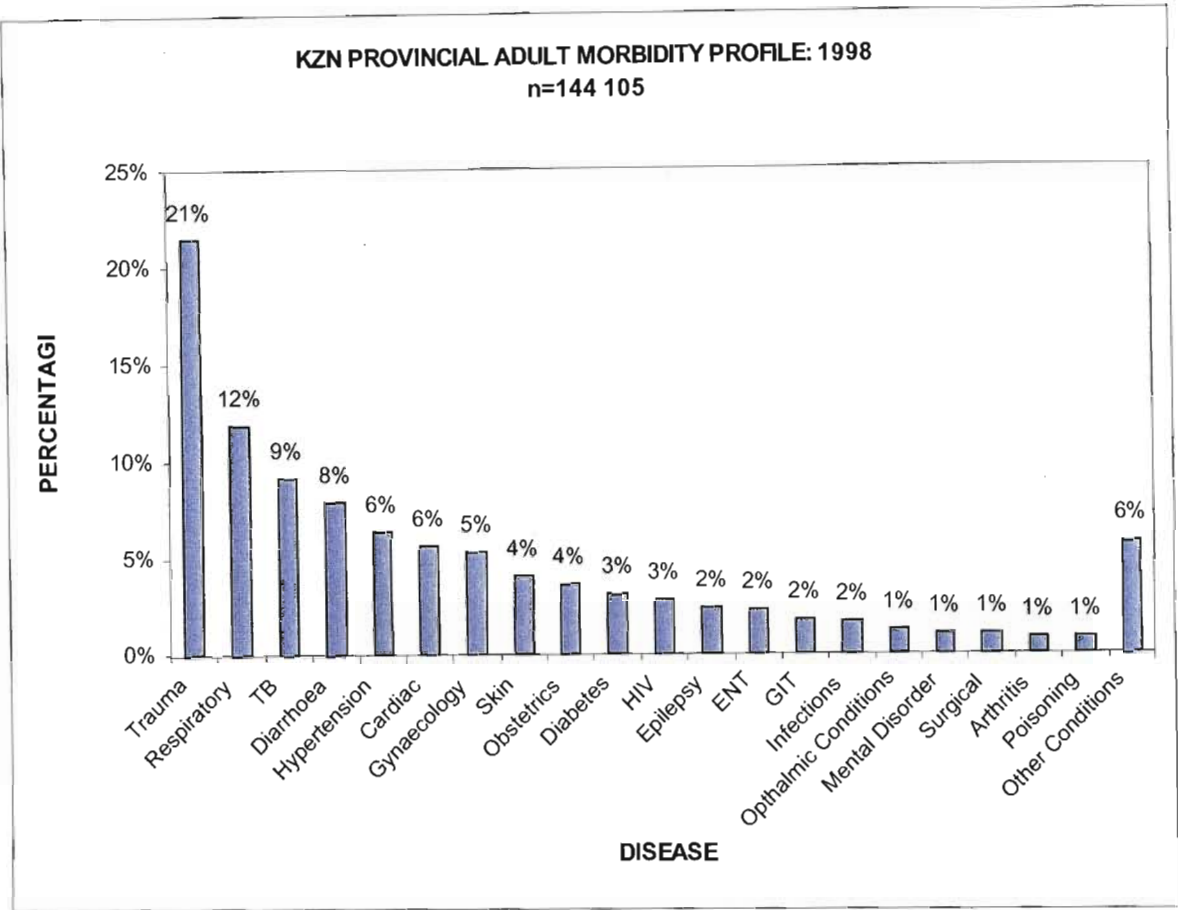
Fig 10 : KZN Adult morbidity profile at hospitals

Trauma : Was the most prevalent cause of morbidity in the province.
TB : Following on, and separate from other Respiratory conditions, TB was the third commonest condition in the province.
Diarrhoeal Diseases : Emerge as the fourth commonest condition in the province. As with TB, the key informants were of the opinion that the high prevalence of diarrhoeal diseases was a manifestation of HIV/AIDS, a fact which could not be verified from the available data.
HIV/AIDS : Eleventh commonest condition provincially, Empangeni being the leading region where this condition was the sixth commonest.
It was presumed by clinicians that this was gross underestimation of HIV/AIDS as only those cases that on clinical grounds, the clinician asked for the test, and even then some cases refused the test. A large number of HIV positive cases were suspected among the respiratory conditions, TB, diarrhoea and malnutrition.

KZN PROVINCIAL ADULT MORTALITY PROFILE : 1998
n=6105

PERCENTAGI / DISEASE

Values shown on bars: 18, 17, 15, 9, 8, 5, 4, 3, 3, 3, 3, 2, 2, 1, 1, 1, 1, 1, 1, 0, 1

Categories: Cardiac, TB, HIV, Diarrohea, Respiratory, Diabetes, Trauma, Gynaecology, Infections, GIT, Malignancy, GUT, Hypertension, Poisoning, Obstetrics, Malnutrition, Blood Dycrasia, Neurological, Malaria, Epilepsy, Other Conditions
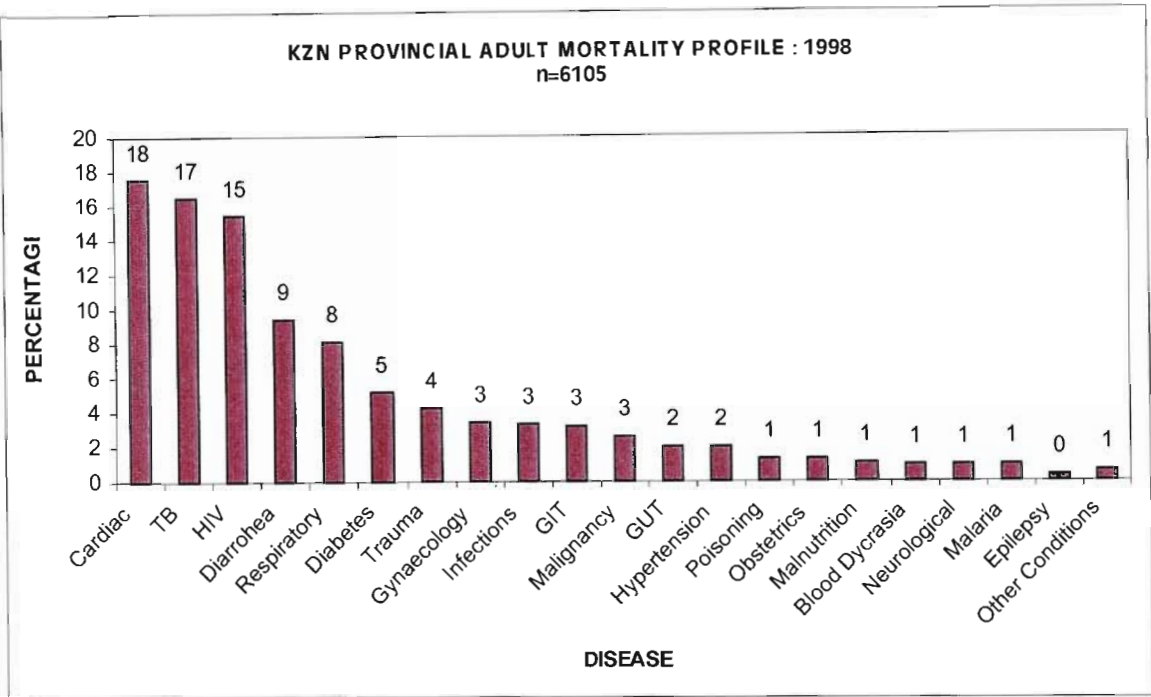
Fig 11 : KZN Adult mortality profile

Cardiac (Ischaemic Heart disease, Cardiac Failure, CVA etc) : A sixth commonest cause of morbidity was a leading cause of adult mortality in the province. Pietermaritzburg region contributed a large proportion to this high prevalence of cardiac cases. (Appendix 7)

TB : Was the second commonest cause of death in the province.

HIV/AIDS : A third commonest cause of death. The high mortality from this disease was related to the very high prevalence in the province (32 % in 1998).

Trauma : A leading cause of adult morbidity in the province, was the seventh commonest cause of death.

4.3.3 MATERNAL AND WOMEN'S HEALTH

FERTILITY : (Data from SADHS 1996)
KZN had the third highest fertility rate (3.3 %) in the country, and was above the national average of 2.9 %.

ANTE-NATAL CARE : (Data from SADHS 1996)
In KZN the proportion of women attending ANC was found to be 66%, slightly higher than the national average (65.5%).

TEENAGE PREGNANCY
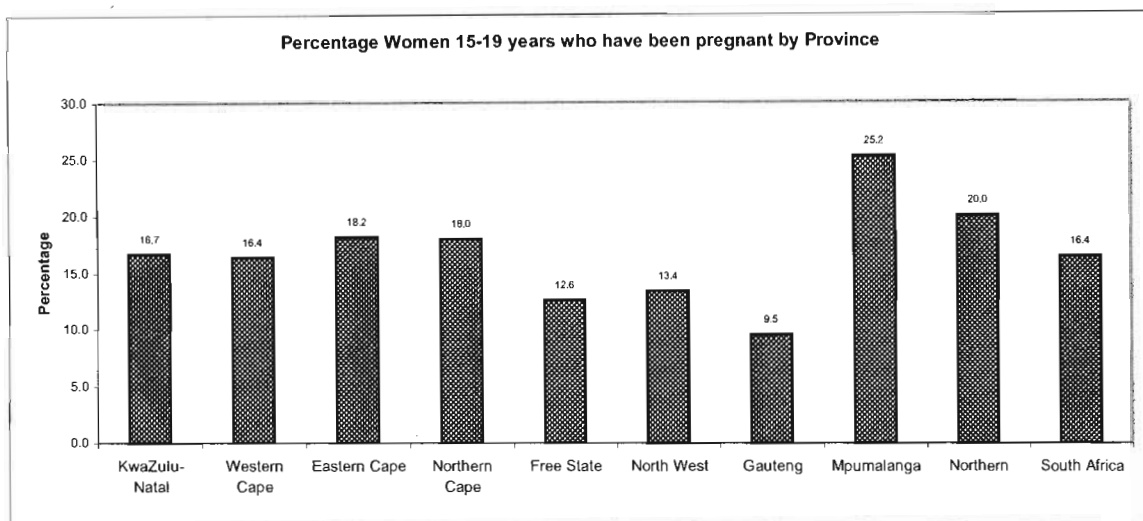
Fig 12 : Prevalence of teenage pregnancy. (SADHS 1996)

Teen years or adolescence is a period of transition from childhood to adulthood, and is defined as the period 15 – 19 year age group by the WHO.
Teenage pregnancy in KZN was found to be 17% just above national average of 16%.

MATERNAL MORTALITY
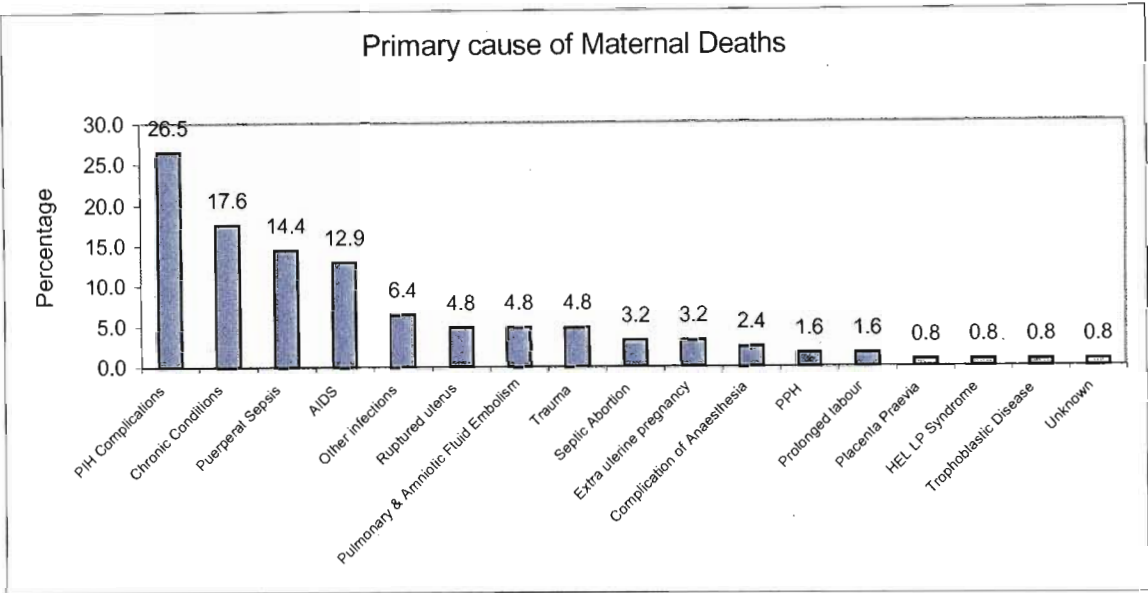
Fig 13 : Primary causes of maternal deaths (Data source : NCCEMD)

Hypertensive complications in pregnancy, infections including HIV/AIDS and chronic conditions (cardiacs, diabetes etc.), were the five commonest causes and together, were responsible for 81 % of all causes of maternal mortality. Whilst accurate data on maternal mortality is not available in SA, it was estimated by the NCCEMD that the national average was 100 deaths per 1000 live births.

TERMINATION OF PREGNANCY (TOP) :
      (Data from KZN Health Informatics)

TOP was commonly performed on adult African women (18 years and older). The majority (92 %) of TOPs were conducted within the first trimester of pregnancy and, the commonest (98 %) indications were social   reasons.

Family Planning by service provider: KZN
n= 170 781
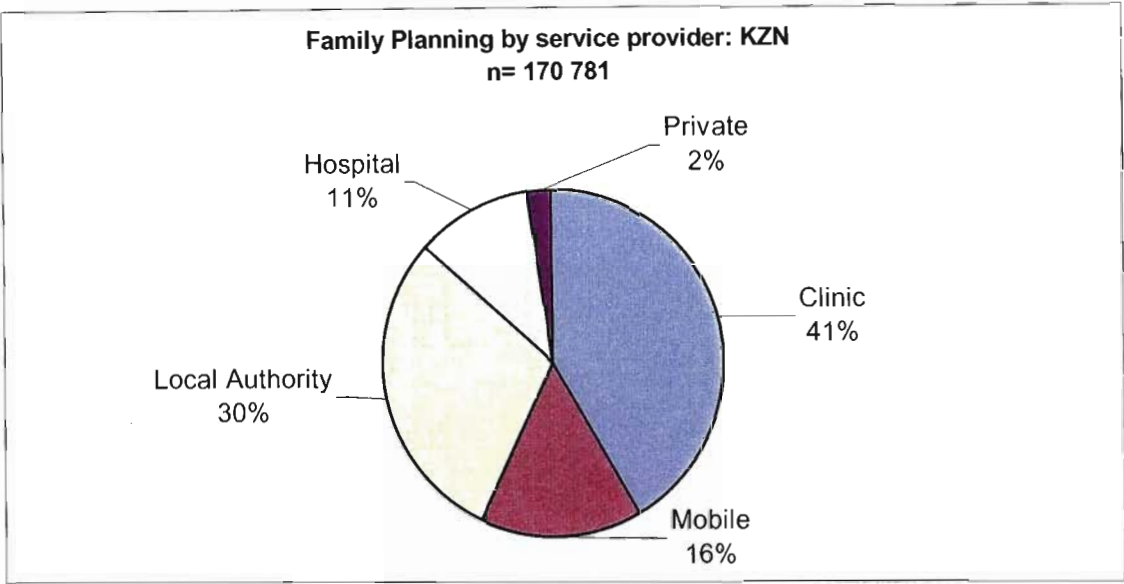
Fig 14 : KZN family planning by service provider (Data for KZN Health Informatics)
n= 170 781

The DOH was responsible for 68 % of family planning service in the
province and the provincial clinics were the main providers of this
service.

4.3.4 NOTIFIABLE CONDITIONS
(Data source : KZN Health Informatics)

Tuberculosis :

TREATMENT OUTCOME OF SMEAR POSITIVE
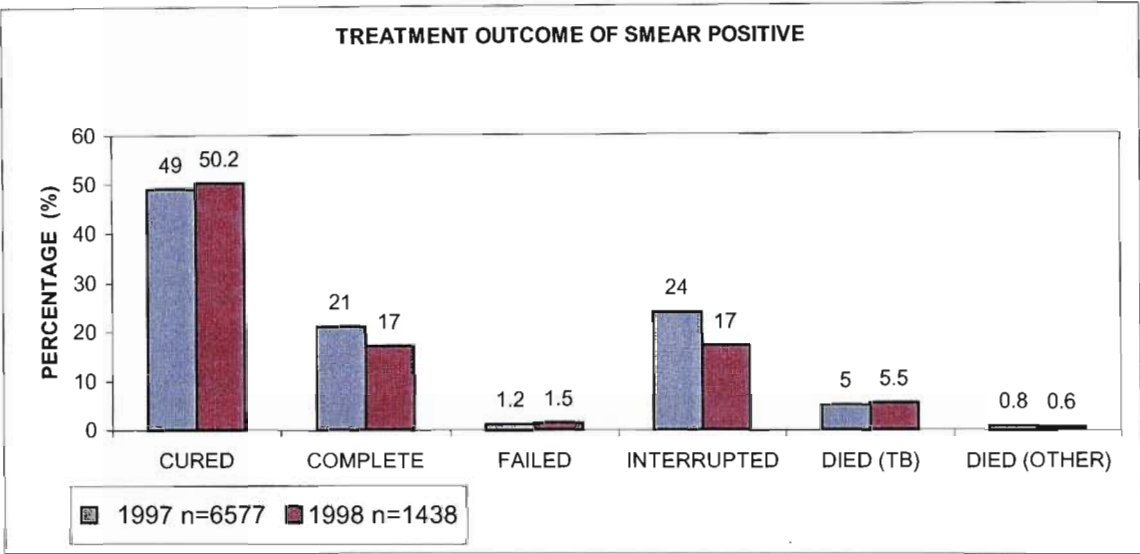
Fig 15 : TB Treatment outcomes of smear positive cases

Almost two thirds of patients diagnosed smear positive PTB were in the Durban and Empangeni Regions. Later in this report; will be observed that the two regions have very high prevalence of HIV. There were low cure rates and treatment completion. Treatment interruption rate was high.

Malaria

Malaria cases by District: 1997 and 1998
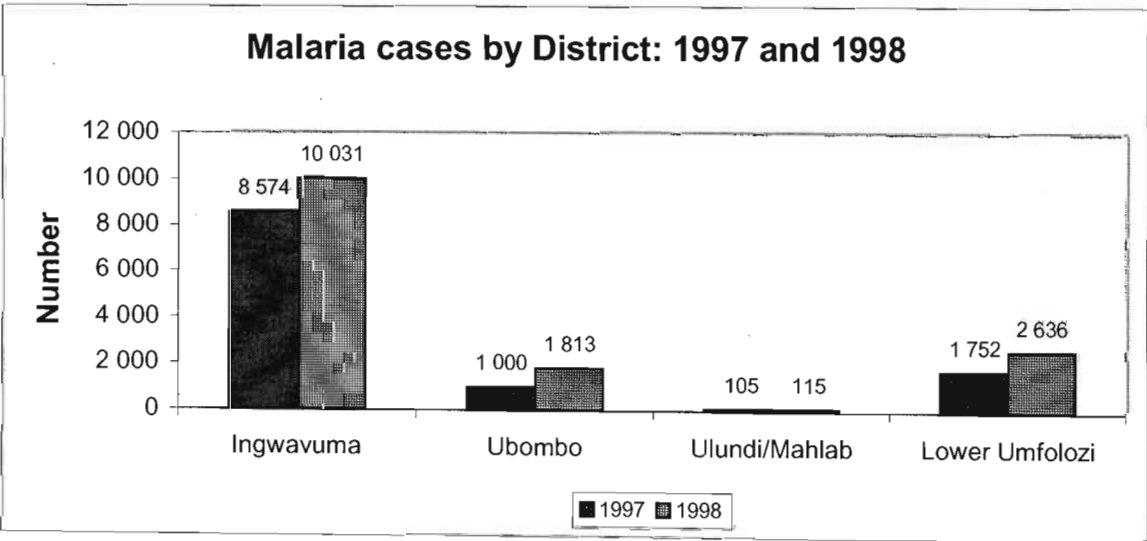
Fig 16 Malaria in KZN Districts(Data Source: Malaria Control Programme (MCP)
There was a high prevalence of malaria in Ingwavuma district.

HIV/AIDS

HIV ANC CASES PER REGION: 1996 - 1998
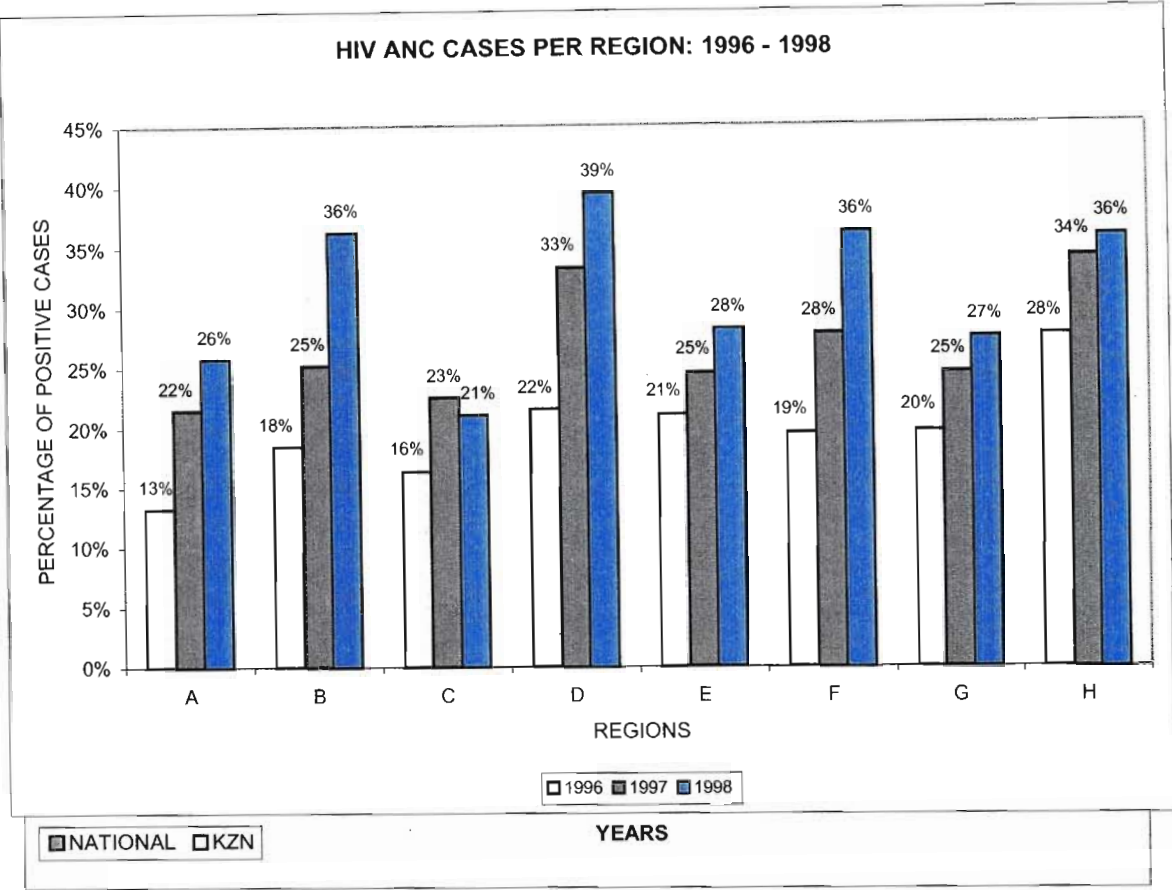
Fig 17 : HIV prevalence at Antenatal clinics in KZN vs National prevalence. (Data source : DoH Antenatal surveys)

There was a rapid progression of the epidemic in SA and KZN in particular. It was estimated that 22.8 % of women attending public health ANC in SA, were infected with HIV by the end of 1998. This represents a 33 8 % national increase in the prevalence of the disease since 1997.The KZN figures showed a rise from 26.9 % amongst the same population group to 32.5 %

Fig 18 : HIV prevalence in the 8 regions of KZN
(Data source Virology department, University of Natal)

There was a high prevalence in region B (Durban) and region D (Empangeni)

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4.3.5 OCCUPATIONAL CONDITIONS
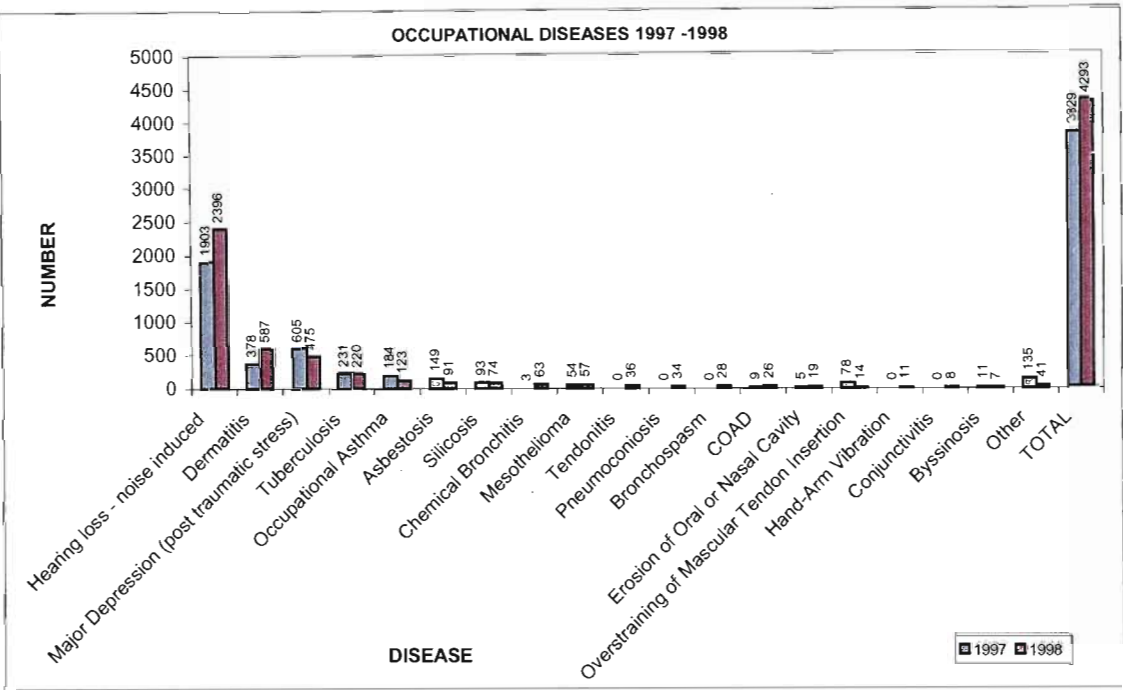
Fig 19 : Occupational morbidity in SA (Data source: Compensation Commissioner's Report 1998)

From this national occupational morbidity data, noise induced hearing loss, depression, dermatitis, TB and occupational asthma together constituted 86 % of all reported occupational diseases. This list comprised all reported cases including those that were not successful in application for compensation.

CHAPTER 5 : DISCUSSION & RECOMMENDATIONS

SPECIFIC DISCUSSION

Introduction :

The HIS is a critical component of the DoH in health services planning, delivery and management, and applies through all levels of the system.

An ideal HIS would have the following characteristics:

a)Adequate inputs, with specific reference to infrastructure, data, hard and software.

b)Functioning System:

> 1.1 Correct and feasible indicator identification,
>
> 1.2 Timely, accurate and complete data availability on the identified indicators,
>
> 1.3 Data processing and information utilization at all levels,
>
> 1.4 A free flow of information from institutions to central level of the DoH,
>
> and a feed back mechanism to institutions.

c)Impact on policy formulation, review and implementation, health sector reforms, resource allocation, health policy objectives monitoring and evaluation.

Review of Existing HIS and its relevance to the EDIS

There seemed to be relatively adequate technological resources available in the province, a fact that was confirmed at the national district HIS workshop, "this province has a highly developed electronic information system".[76]

Data on a wide variety of indicators in different programmes, was collected and collated throughout the province, but the analysis and interpretation of these data as a source for managers in decision-making, was poor. The detailed bulletins/reports of data thus produced were not very meaningful to the managers. The EDIS would have to assist in simplifying, clarifying and improving these bulletins. These reports were neither read nor used by managers (a fact of great concern to the producers of the same and confirmed by some managers). Little feedback was given to the producers on its quality and usefulness.

Because community based data is not available in SA, accurate data from institutions is very important for the provincial health services management. Most management decisions are made based on institutional data. Since all hospitals in the province were computerised, there was potential for timely quality data from these institutions. However, as identified in one institution, the data was incomplete because there was nobody dedicated to ensuring complete and accurate data at institutional level.

There were also doubts about the quality of data collected at the clinics, a situation said to be attributable to the lack of an information culture countrywide. The recently implemented clinic register was said to be incorrectly completed, a fact that was verified through an evaluation of the same.[87] The generation of an information culture resulting in the collection of better quality data, is one of the challenges and a key objective of the EDIS.

Gross underreporting of notifiable conditions has been identified as a big problem in the province, as is the case nationally, a fact that is not unrelated to the general poor information culture.
Laboratory services in the province had the most accurate and comprehensive data set on malaria incidence in the province which could be used to validate notifications.

The Virology Department had the best data set on HIV/AIDS in the province. This department's relationship with the DoH, is crucial in the light of the HIV/AIDS epidemic in this province, and does need to be formalised, to ensure sustainability and free flow of information between the two departments.

The activities of different Non Governmental Organisations (NGO's) implementing HIS at certain districts was a cause of concern, which again, whilst welcome, could compromise uniformity and therefore co-ordination in the province. Other countries like Uganda, in addressing similar issues adopted a "common basket" approach to NGO funding, and in turn worked out best mechanisms to implement their own programmes countrywide. (Dr Tiberius, Director of Health services, Uganda – personal communication)

Most importantly, the fact that provincial data was captured, analyzed and interpreted at the national office, contradicts the principles of decentralized management as espoused in the White Paper and other policy documents.[37, 38, 39] Such a situation if left unchanged, deprives data collectors of ownership of their information and can only perpetuate the existing poor information culture in the province and the country as a whole.

Demographic Profile
Although the total population of KZN (largest in the country) was estimated at 8.7 million, the midyear population estimate for 1999 was 8.9 million. This was based on demographic macro-simulation methodology, producing projections from the base population of Census 1996. No account in these projections was taken however, of AIDS mortality, internal migration or uncertainty[54,71]
The SA demographic projections by Gregson, Zaba et al, indicate that even with the worst scenario of AIDS epidemic, there will not be a negative population growth, but life expectancy will decline with an upsurge of orphans.[139]
The population size of KZN is out of proportion to the size of the land, (only 8% of the country falls under KZN). The racial profile, with Africans in the majority, followed by Indians, is historical. In the whole country, KZN has the largest population of Indians. As in the rest of the country, more than half of the total population, live in rural areas.
The age distribution is typical of a third world country for Africans, Indians and Coloureds with the dominant age group being children. This distribution is classically different for Whites, whose age distribution simulates that of first world countries. These anomalies are a reminder of the history of this country which was for decades ruled under apartheid laws which were based on racism. (Appendix 2)
There has been over the past 5 to 10 years a dramatic decrease in fertility among the populations of SA. The contraction of the 0 to 5 year band in African children, though less than in other populations, heralds significant demographic change or selective mortality in this age group due to HIV/AIDS.

Socio-Economic Status

This province is one of the poorest in the country with low employment rate and high dependency rate. The economically active population by mid-year 1999 was estimated to be 3million (34% of the KZN population.) Even amongst the employed, a majority (81 %) earn anything between R1 and R3 500 a month while the rest (29%) earn above. Informal sector, manufacturing industry and community services are the commonest economic sectors for employment. (Appendix 3)

The majority of the population is poor, illiterate, mainly women (53%). Within a context of KZN having the highest incidence of HIV in the country, serious concerns about the success of interventions to combat the epidemic, and to break the poverty cycle, are raised. The high unemployment rate of 39% and very low earnings by the majority of those employed imply that the majority of the population is and will remain below the poverty line for decades. That only 34% of the KZN population is economically active, is a serious cause of concern.

Disability

Disability is one of the least studied and neglected problems. (Appendix 4) Reports from key informants indicate that loss of eyesight is the commonest cause of disability, mainly due to cataracts. This is reversible with a simple one day procedure. But because of high illiteracy rate, the affected people do not know about their condition and thus remain disabled. (Opthalmologist at KEH: personal communication)

The occupational hearing loss in KZN, in the absence of provincial occupational morbidity data, was difficult to quantify. Some studies suggest that the majority of hearing loss was noise induced and mainly occupational. [80-82] In terms of the Compensation for Occupational Injuries and Diseases Act, this would be compensatable from the commissioner's office.[91]

These are critical issues because the Department of Social Welfare has long been stretched to the limit by the number of claims for disability. This impacts negatively on the really needy disabled people with no prospect of any other form of income.

Environmental Profile

That only 34% of the population do not have access to tap water and only 17% have no access to hygienic toilets, in the absence of urban/rural breakdown and other factors associated with poverty, needs to be treated with caution since there is high prevalence of diarrhoeal diseases in the province.

This high diarrhoeal diseases prevalence is due either to environmental factors (poor PHC services) or the ravaging effect of HIV/AIDS. Further epidemiological studies conducted in this province should further clarify this problem.

CHILD HEALTH

Indicators like infant and peri-natal mortality rates are basic indicators of a country's socio-economic status and quality of life. These are also indicators set by the WHO in measuring different countries' progress toward the goal "Health for all by the year 2000." KwaZulu-Natal and Eastern Cape being the poorer and mainly rural provinces, have the highest infant mortality rates (52% and 61% respectively) than other provinces. The actual causes of infant mortality are however poorly understood. What is known though, is the fact that neonatal mortality accounts for almost 50 % of infant mortality and, that mortality which was on the decline, is again on the rise in the past 5 years as a result of the HIV epidemic. The poor or inadequate obstetrics services in some parts of the province may partially explain neonatal mortalities. Diarrhoea and respiratory conditions were found to be commonest causes of mortality in the province among children in this study.

Child Abuse:

Despite poor quality and under-reporting of child abuse, the reported figures were quite high. Child neglect seems to be very common or possibly the most reported problem. The fragmented data from different sources made it difficult to make accurate assessment of the problem.

In terms of the Child Care Act no.74, 1983, a child is any person under the age of 18 years. The Act aims to promote the general welfare of children, to ensure adequate welfare services and prevention of neglect or maltreatment of children.[94] Section 4 of the Family Violence Act no.133 of 1993, states that any person who examines, treats, attends to, advises, instructs or cares for any child in circumstances which result in reasonable suspicion that such a child had been ill-treated, suffers from an injury, the probable cause of which was deliberate, shall immediately report such a case to the police or child welfare organisation.[95]

In spite of all the stated legislations, child abuse is a very common but unrecognised problem worldwide. The fact that lately child abuse is accorded a great deal of exposure in the media in SA., has resulted in identification of more cases.[96]

In the early 1960's Kempe brought home the horror of this problem phrasing it as "battered baby"[97] Since the 1970's it has been recognised that sexual abuse occurs frequently in many countries, including SA. The problem is further compounded by the justice system, where the legal and medical findings often disagree. This was confirmed in some studies where, convictions were obtained in 79% of cases of child abuse where there was no physical evidence and in only 67% of cases with physical evidence. Convictions seem to depend largely on whether the accused pleads guilty, or whether the child is a convincing witness.[98-101]

Although it is well documented that children who have been sexually abused without penetration show severe psychological sequelae, diagnosis of sexual abuse is made more readily in penetrating diagnosis of sexual abuse and this correlates well with STD's.[102-104]

In KZN, HIV/AIDS complicates this problem. The recent protest by some concerned citizens to the DoH, demanding anti retroviral prophylaxis to rape victims is an issue that the State, (within its limited resources) should seriously consider.

Every child has a right to exist and grow in an environment that is conducive for him/her to realize his/her potential. Depriving a child of such an environment through neglect, a common form of abuse in this country, is a punishable offence.

Childhood Diarrhoea:

Diarrhoea resulting in dehydration is a frequent cause of death in young children. The administration of oral rehydration therapy (ORT) is usually a simple and effective means of countering the effects of dehydration. Both this study and SADHS found KZN to have a high prevalence of diarrhoea among children.[105] It was encouraging to note though, that in the same province, appropriate treatment was given to all children with diarrhoea. As was discussed before, this high prevalence of diarrhoea and allegedly better environmental conditions (water, sanitation), is a contradiction. In the presence of relatively high HIV prevalence among pregnant women in the province, one could be persuaded to consider HIV/AIDS as a responsible factor. A study at KEH adult inpatients on the impact of HIV found that 70-80 % of HIV patients had diarrhoea.[118] No data on similar studies among children is available though, and thus the question of HIV impact among children remains unclear.

Paediatric Morbidity and Mortality Profile

Morbidity

Diarrhoeal diseases, a highly preventable condition under normal circumstances, was the commonest cause of paediatric morbidity in the province. It was again suggested by the clinicians that HIV/AIDS was responsible for this prevalence, an assumption that could not be verified in this study. It is a cause of concern that in 1998, the leading cause of morbidity and mortality in young children, in KZN, is still diarrhoeal disease As with other studies, respiratory diseases are not surprisingly of high prevalence in this province.[119]

HIV : The relevance of HIV infection for child health is an extrapolation from HIV sero-prevalence estimates in pregnant women, since it is known that this is the dominant source of infection in children as well as existing estimates of mother–to-child transmission rates. On this basis it is expected that about 10 % of all African children in KZN are infected with HIV. This highlights the importance of anti-retroviral and modified feeding strategies for mothers and children at risk.

Malnutrition: A sixth commonest condition in KZN, is underestimated considering that malnutrition is under diagnosed even among the few that present to the institution. It was also suggested by clinicians that HIV/AIDS contributed to this prevalence.

Poisoning: Among the first ten commonest causes for admission of children, the poisoning mechanism could not be established in this study, but it is known that among the African children, the vast majority of poisoning are due to paraffin ingestion.

Mortality

Diarrhoeal diseases ; a leading cause of morbidity, was also a leading cause of mortality in the province. The mortality rate from this was calculated to be 25%. This is a high mortality rate from a preventable cause. Again HIV/AIDS is a confounder in causality.

Malnutrition : A sixth commonest morbidity cause is the fifth cause of mortality with a mortality rate of 7%. This high mortality rate from malnutrition is explained on late presentation of patients and to concurrent HIV infection. Reported deaths from HIV/AIDS are the sixth commonest with a high mortality rate of 8%. The same argument of AIDS cases among TB, diarrhoea and malnutrition holds, and thus this figure might be an underestimation of the problem.

The majority of causes of death among children in this province are from preventable causes. South Africa now fully committed to the principles of Primary Health Care and a late signatory to the Alma Ata Declaration, it is alarming and a cause for serious concern that diarrhoea is the leading cause of morbidity and mortality in one of its provinces. If the theory about HIV being responsible for this mortality is accepted, further studies should attempt to quantify the contribution of HIV and non effective PHC services, to the problem of diarrhoea in the province.

Immunizations

The immunization coverage of children in KZN was low at 49,5% while the national coverage was 63%. These figures were consistent with the national DoH estimates of 37% for BCG and 42% for measles coverage in KZN 1998.

A consistent finding throughout the country was the tendency for coverage rates to decrease as dosages increase. Thus, for vaccines requiring more than one dose such as polio and DPT, rates were higher for the first and second doses than for subsequent doses. This suggests that the dropout rate was due mainly to increasing or later doses of vaccines than other factors. KZN was also found to have the lowest percentage (62%) of children with immunisation card compared to the rest of the provinces, another indicator towards poor immunisation coverage.

The WHO guidelines for childhood immunisations, call for all children to receive a BCG vaccine, three doses of DPT vaccine, three doses of polio vaccine and a measles vaccination. Despite the problem of the denominator (source population), in calculating the coverage for the province, these estimates point to a very low immunization coverage. If this province is to achieve the goal of the Expanded Programme on Immunizations (EPI) of the WHO, to fully vaccinate all children, within the strained resources, much work remains to be done.[133-137] This is a serious challenge for the DoH. The performance of the EPI needs to be monitored and evaluated on a continuous basis in order to improve the coverage.

Ante Natal Care

In the Durban region, mobile clinics were the leading providers of ANC, while in the rest of the province, they were fixed clinics. This is appropriate, but there is concern about less involvement of mobile clinics in 6 other regions, since mobile clinics would be more cost effective strategies for ante-natal care especially in rural areas.

Pregnancy is not a disease, and proper care during pregnancy and child birth are important to the health of both a mother and her baby.

The SADHS findings of low ANC attendance figures are worrying. With these services offered free at public facilities, other factors will have to be investigated for the cause. ANC attenders are a sentinel group used to estimate the HIV prevalence nationally and if the attendance deteriorates, the actual prevalence may never be known.

WOMEN'S HEALTH

Statistical data around women's health are not systemically collected. Little is known about how social and economic factors affect the health of women of all ages, or about the provision and use of health services by girls and women. Medical research is often based on men, and statistics are not gender specific. This means that there is no appropriate adjustment in treatment and medication on the basis of gender differences. (Beijing Conference: Plan of Action)

South African women's experience of poverty, violence, negative attitudes, powerlessness over their sexual and reproductive lives, and lack of influence in decision-making, all affect their mental and physical health. In poor homes, girls and women get the smaller share of food and, a double load of work in the domestic and employment areas. There is a serious lack of counselling and reproductive health information for young girls, combined with the trend for early sexual experience. This increases the risk of unwanted pregnancies, unsafe abortions HIV and other STDs. The rapid increase in the rate of HIV infection is highest among young women. Early child bearing also impedes the educational, economic and social opportunities of young women.

Women who do not have control over their sexual and reproductive lives do not have power to insist on safe sex and are subject to coercion and violence. Men are not educated to respect women's choices and to share the responsibility with women on matters of sexuality and reproduction. The ability of women to control their own fertility forms an important basis for their enjoyment of other rights.

In SA, the quality of women's health-care is very poor. Women are treated with little respect, are not guaranteed privacy or confidentiality in their health treatment, and seldom receive full information about the options and services available to them.

In rural areas women are not given any choice in contraception besides Depo-provera and, often nurses administer this contraceptive injection routinely when women give birth. Illegal abortions were quite high in SA until a new legislation legalised termination of pregnancy. Illegal abortions, often septic, increase national mortality rates and the incidence of pelvic inflammatory disease, infertility and psychological trauma.

Violence Against Women:

This is one of the most under-reported problems in SA. Rape in particular, is for various reasons (stigmatisation, cultural), grossly under-reported. Abuse by spouses is notably 'unknown' in some communities where the culture of male dominance is accepted as a norm.

Abuse of women is a phenomenon that has not been well studied in SA, in spite of all the policy changes within the democratic dispensation ensuring gender sensitivity at home, at work and within communities. Added to this, is the problem of poor reporting and under diagnosis of this problem. [106]

Domestic violence has been described as the single most common cause of physical trauma in women presenting to the health care services in the USA, commoner than trauma from automobile collisions, muggings and rapes combined. [107]

Some studies have warned that medical practitioners frequently overlook the importance of domestic violence. [108-109] It has been argued convincingly that screening for domestic violence in primary care is not only acceptable to patients but may lead to more timely and appropriate intervention. [110] Nevertheless, additional efforts to ensure that practitioners have a commitment towards and knowledge of such screening and intervention are necessary. [111-113]

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There is evidence that women subjected to domestic violence may suffer from a range of psychiatric symptoms, including anxiety and depression. Such women may be more likely to have psychiatric symptoms than physical injuries, making it incumbent on primary care workers to recognise psychopathology. Post traumatic stress disorder (PTSD), a complex disorder characterised by multiple symptoms including shame and guilt, and often accompanied by depression, may be a particularly useful diagnosis in many survivors of domestic violence. There have been relatively few studies of the prevalence of domestic violence or PTSD in the South African setting. Nevertheless, studies of physical trauma in casualty settings as well as other kinds of data suggest that domestic violence may also be an important problem in this country.[114-116]

The reason for the continued abuse despite constitutional rights, are partly from women not understanding their rights or reluctance to bring their abusers forward for persecution and the fact that despite well-intentioned policies in place, the majority of top management positions are held by men, who have no real grasp of the physical hurt and mental humiliation to which women are frequently subjected. The findings of the SADHS that 13% of women countrywide, and 10% in KZN had been abused by their partners, is interpreted with these limitations in mind. KZN again has a lower than national average percent (4%) of women ever raped at 3%. The demographics of the province, cultural beliefs, traditions and norms among the dominant population groups should be taken into consideration when interpreting the prevalence figures.

Fertility:

The total fertility rate, an indication of the number of children a woman would have by the end of her reproductive years, was found to be third highest in the country. A number of factors are responsible for high fertility rate among which, poverty, level of education, rural citizenship, ethnicity were investigated.

Fertility is again an important indicator of the country's state of development, and the high fertility rate observed in most provinces of SA, KZN in particular, indicates how underdeveloped this province is.

Teenage Pregnancy

Teen years or adolescence is a period of transition from childhood to adulthood, and is defined as the period 15–19 year age group by the WHO.

Teenage pregnancy in KZN was just above the national average. This represents a very high level of teenage fertility, and is a cause for concern to the state. The high teenage pregnancy prevalence has implications to the ANC programmes, as these have to specially prepare teenage and single mothers; delivery services (one in eight teenage deliveries is by caesarian section), and teenage motherhood programmes.

Maternal Mortality

Pregnancy and labour are natural processes, thus, few women should suffer severe complications, certainly none deserves to die thereof. Unfortunately, maternal mortality is a major problem in developing countries, and SA is no exception to this. The findings of the National Committee on Confidential Enquiry into Maternal Deaths (NCCEMD) that hypertensive complications in pregnancy, infections including HIV/AIDS and chronic conditions (cardiacs, diabetes etc.), were the five commonest causes and together were responsible for 81 % of all causes of maternal mortality, is important revelation for the DoH, Maternal, Child and Womens' Health programme in particular.[79]

These are all preventable, suggesting that potentially maternal mortality can be reduced in KZN. The report of the NCCEMD suggests that women over 34 years old, younger women, women with pre-existing heart disease and women who had caesarian section are at special risk for a number of complications including the above listed causes of death.

Another major contributor to the problem is related to health seeking behaviour of pregnant women, especially delay in seeking help when health problems arise.

In the absence of complete data, it is difficult to conclude why the Durban region seems to have the highest maternal mortality, except to speculate that, because of the referral patterns in Durban, more complicated patients are referred to these centres, some of whom die.

Termination of Pregnancy (TOP)

There seemed to be a high demand for TOP among Africans compared to the other population groups, but in the absence of a denominator, it was difficult to provide a rate as a more accurate indication of this problems by population group or race.[75]

That the majority of women province wide seek TOP within the first 12 weeks of pregnancy, beyond 12 weeks attendees were mainly found in the Durban region, could be due to the fact that Durban is a referral centre for most hospitals in the province. Thus complicated cases, including those seen at the second and third trimester are logically referred to higher levels of care centres.

The findings that a majority of women seeking TOP were single (83%) and, that 98% of women sought TOP for social and economic reasons, was in keeping with the suggestion that the major reasons for seeking TOP were non-clinical. The major force behind seeking TOP being anticipation of problems of a single/unmarried parent, especially considering the high unemployment rate in the country and particulary amongst females.

Another important component of TOP which the DoH does not report on, are the cost implications of the procedure. A study[138] looking at the cost implications of TOP's performed in the public health sector showed that the following factors had the largest impact on the cost of TOP viz.

- The gestation age of women under going the procedure.
- The level of care at which the procedure was performed.
- The in patient length of stay and finally
- The drugs used

Family Planning

Whilst the DoH was the main provider of this service, it is worth noting that the private sector does provide this public health service. This needs to be explored further in the light of limited public health resources and many other public health programmes. A study by this author[120] investigating a possibility of involving private doctors in the TB control programme (TBCP) concluded on overwhelming willingness of private doctors to participate in the TBCP, despite problems identified by other studies.[124-126]

For reasons that are historical, the local authorities provide family planning to almost one third of the population that goes for family planning.

Primary Care Morbidity

The finding that STDs were among the first 5 commonest conditions seen in the majority of regions is very significant. High STD prevalence have implications for HIV transmission, as studies have confirmed the high level of association between STD and HIV transmission.[127-128]

Chronic conditions (diabetes, epilepsy, arthritis) also commonly seen at clinics is probably a reflection of clinic utilization by the elderly population, visiting for follow up treatment. The high prevalence of worm infestation has serious nutritional implications for the young children.

Abuse was diagnosed at clinics and was among the first twenty conditions in the province. Because of under diagnosis and under-reporting of abuse, these figures are probably an under-estimation of the problem.

The high prevalence of respiratory conditions at primary care level in KZN is typical of a third world country and in keeping with other studies.[119] Upper respiratory conditions (flu's and colds) are seen commonly at the clinics. The low TB figures seen at this level of care in the province should be a cause for concern to the relevant programme managers as this is a pointer to the poor implementation of the DOTS programme provincially, with severe financial implications for the province.[121]

These findings have serious implications for many programmes in the province viz. Health Promotion, HIV/AIDS-STD, Environmental Health, Nutrition, Chronic Conditions and Forensic Directorates, for appropriate intervention strategies, and are a pointer of the need for the Unit to assist in programme planning, implementation, monitoring and evaluation.

Adult Morbidity Profile

The high prevalence of trauma, mainly from traffic accidents and physical violence is a cause for concern to all health workers in the DoH. Most importantly are the implications for intervention strategies, as this then becomes not a problem for the DoH alone. Other departments, Transport, Police, Justice etc are important role players in intervention. Trauma, both physical and non-physical, is possibly the most ignored public health issue in SA. Death due to trauma injury – sustained in traffic or household accidents or through inter-personal violence – far outnumber deaths caused by AIDS.

While no single factor has been proven to be 'the cause', many factors, social and personal, contribute to the high levels of trauma in SA. During the apartheid era, violence as a way of life was institutionalised and legitimised by a state, which implemented its policies through violence. The struggle for liberation involved arming communities and the distribution of guns, which now play a large part in the number of fatal and serious injuries. The fabric and texture of life of entire communities has been torn apart by forced removals resulting in the most inhumane of living conditions and often non-existent opportunities for employment. The vertical violence coming down from the state is translated into horizontal violence where anger and frustration are turned on those most accessible, family members, friends and acquaintances. This has been compounded by inadequate civil structures so that people cannot rely on the police and courts for protection.

Coupled with this, alcohol frequently associated with all forms of trauma, is freely available, and many have turned to drinking as a way of escaping the horrors of everyday reality. Even with only the legal amount of alcohol in their blood, drivers and pedestrians have a substantially increased risk of being killed or maimed in motor accidents.

Following on, and separate from other respiratory conditions, TB was the third commonest condition in the province. According to key informants at these hospitals, this is possibly related to the HIV prevalence, but such association could not be validated with the available data. The study at KEH showed that the prevalence of TB among the patients was 34%.[117]

As with TB, the key informants were of the opinion that the high prevalence of diarrhoeal diseases was a manifestation of HIV/AIDS, a fact which could not be verified from the available data, but the same study at KEH, showed a prevalence of 8% diarrhoea among HIV positive patients. This finding contradicts the finding of another study by Simjee with 70 to 80% prevalence.[118] Thus, the burden of HIV/AIDS at institutions remains unknown. A large number of HIV positive cases are suspected among the respiratory conditions, TB, diarrhoea and malnutrition. From the available data, it was impossible to verify and quantify this assumption. This is a major challenge to the EDIS, to plan data collection strategies and surveillance of HIV/AIDS.

All the above are preventable conditions and all have implications for the directorates of Health Promotion, HIV/AIDS-STD, Environmental Health, Maternal Child and Women's Health, Chronic Conditions; and for the planning of intervention strategies.

Adult Mortality Profile

TB was the second commonest cause of death in the province and a leading cause in the Durban and Empangeni regions. This according to the clinicians is partly related to HIV/AIDS. The high mortality from HIV/AIDS (third commonest) is related to the very high prevalence in the province (32 % in 1998). This figure is again said to be highly underestimated as only those cases that were tested are counted.

Diarrhoeal diseases: a highly preventable disease has a high mortality rate in this province as the fourth commonest cause.

Malnutrition : although not rated among the first twenty morbidity causes, was among the first twenty mortality causes. This high mortality from malnutrition is explained on a number of factors among which is the usual late presentation of these patients as well as HIV/AIDS complication.

The majority of mortality causes in this province were from preventable conditions. Even the cardiac conditions, leading cause of death, are due to complications of illnesses that could also have been prevented through elimination of risk factors, for example, diet, exercise, non-smoking.

Notifiable Conditions

Almost two thirds of patients diagnosed smear positive PTB were in Durban and Empangeni regions. The two regions also have very high prevalence of HIV. Programme indicators (cure, treatment completion, and interruption rates) are all poor by the WHO standards. (Appendix 5).

With such bad indicators and poor management of this highly infectious and devastating disease, it is not surprising that the country and this province in particular, is facing a huge challenge of multi drug resistant-TB (MDR-TB) and a high mortality from the same disease, a situation which led the WHO, the South African DoH to declare PTB a global emergency and national priority respectively.[121-122] Given the national target of 85% cure ratio, KZN in 1998, is still far from achieving this objective.

The problem of poor notification system in the province is very evident if one compares figures from the MCP (14595), from only 3 districts, to figures from the surveillance (8251). This translates to 44% of malaria cases from only 3 district not notified. (Appendix 5, Fig 20)

HIV/AIDS

The disease continues to progress as one of the most important public health problems in SA, since the first documented case of HIV in this country 16 years ago. In the absence of data on HIV, the DoH has based its surveillance on sentinel groups viz.: ANC surveys, STD clinics, voluntary testing, mortuaries and crematoria.[83-86]

The annual ANC surveys have been the cornerstone of HIV surveillance in the country and have been very useful in planning and decision-making.

It is estimated that 22.8% of women attending public health ANC in SA, were infected with HIV by the end of 1998. This represents a 33.8% national increase in the prevalence of the disease since 1997. The KZN figures show a rise from 1.61% amongst the same population group to 32.5% in less than a decade.[83]

HIV prevalence has continued to rise nationally, with women in their twenties having the highest rates at 26.1% for the 20-24 age group and 26.9% for the 25-29 year age group. The estimated infection rate amongst teenage girls aged 15-19 years has increased from 12.7% in 1997 to 21% in 1998, a very high rate of increase in this age group. KZN continues to have highest prevalence in the country, estimated at 32.5%, and it was estimated that the annual rate of increase was 21%. This progressive increase over years occurs through all regions of KZN.

Given the high prevalence of STDs including HIV/AIDS among the SA population and KZN in particular, women's knowledge, attitudes, sexual behaviour and condom use, become crucial data for the control of the epidemic. The SADHS results proved that knowledge of the disease was universally high (97%) among the sexually active women. However condom use by women was very low at 22% country-wide.[105] KZN was the second lowest in this at 22%, an issue of concern for this province, with the highest HIV prevalence in the country. In the same study, the prevalence of genital sores, as a measure of STDs, presents a dark picture for KZN with the highest prevalence at 11%, more than double the country average prevalence. This has important implications for syndromic STD management policy, as a strategy for HIV control.

It is very important to emphasize that the prevalence shown in the ANC sentinel groups underestimate the sero-prevalence of HIV, since it does not allow for that portion of the population testing negative in the window period. A P^{-24} antigen test demonstrated this point by showing that amongst all those tested negative, 2.3% of those from ANC clinic were actually positive and 3% of those from STD clinics were positive.[86] HIV/AIDS pose a serious challenge for the EDIS. The seriousness with which this epidemic is being taken by the state has resulted in it being declared a national priority, a position that was endorsed by the national legislature. A starting point for the EDIS, is to co-ordinate and improve the available data in the province.

It would have been very useful in analysing this provincial data, to apply statistical models, like Doyle's, to make epidemiological and demographic projections for both the province and the country as a whole. The available data however, did not lend itself to such analysis.

Occupational Conditions

In terms of the Occupational Health and Safety Act (OHSA) and the Compensation for Occupational Diseases and Injuries Act (COIDA), certain diseases and all injuries sustained while on duty should be reported to the Commissioner for compensation. The list of occupational diseases has also been extended and many other diseases that were previously not compensated for are now compensatable.[90, 91]

Data on occupational conditions is very difficult to collect provincially, and the data presented in this study was obtained from the Compensation Commissioner's office. Since there was no provincial dis-aggregation of the national data, extrapolations to KZN would have tobe made after making certain assumptions about their application for KZN.

From this national occupational morbidity data, noise induced hearing loss, depression, dermatitis, TB and occupational asthma together constitute 86% of all reported occupational diseases. This list comprised all reported cases including those that were not successful in application for compensation. Underreporting of occupational diseases is well documented in previous studies, and thus this figure grossly underestimates the extent of the problem[129-131]

In the Libode district of the Eastern Cape, the levels of lung diseases in ex-mine workers were found to be far higher than was previously thought.[129] In terms of the Occupational Diseases in Mines and workers Act (ODMWA) these are compensatable.[92]

The study concluded that:

- rural communities and rural hospitals are carrying a huge burden of mining related diseases.
- there is a huge backlog of compensatable occupational diseases that have not been considered.
- the government must play a role in the activities of the mine.

But, in terms of ODMWA, compensation for occupational diseases is administered by the DoH, and in terms of Mine Health and Safety Act (MHSA)[132] prevention of injuries and diseases is administered by a separate department of Mineral and Energy Affairs. This artificial fragmentation at legislative level is one of legacies of the past and can only make work of the DOH more difficult in terms of achieving its mission viz. optimal health for all

SUMMARY of EXISTING HIS, EPIDEMIOLOGICAL and DEMOGRAPHIC PROFILE

The rapid appraisal of existing HIS in the province revealed a relatively well resourced sub-department of Informatics within the KZN-DoH, with a potential to provide quality and timely data. However, a lot of data collected from both clinics and hospitals was unco-ordinated, incomplete, poorly analyzed and thus not utilized. Critical demographic data was captured and analyzed nationally. There was poor clarity between the Informatics sub-department staff responsible for collecting and processing provincial data and top management with regards each other's needs.

The demographic profile of the KZN population showed features of a third world country for Blacks with the White population displaying contrasting first world characteristics.

The majority of the population was unemployed, poor, illiterate, and the employed earned very low income.

The water supply, housing and toilet facilities seemed adequate, but in the absence of data on urban/rural distinction, this finding needs to be interpreted with caution

All basic indicators of socio-economic status (infant, child, neo-natal mortality rates) were high and this province had the second poorest of the same indicators in the country.

Adult and child morbidity and mortality profiles of the province, both at clinics and district hospitals were mainly from preventable conditions. Diarrhoeal diseases, TB, malnutrition, respiratory conditions, trauma, were among the commonest morbidities in KZN.

Indicators on women and maternal health were consistent with the socio-economic status of this province; and maternal mortality rate was high with causes of mortality that were mainly preventable.

The full impact of HIV/AIDS epidemic remains unquantifiable with the limited data available. HIV is a serious epidemic in KZN and this province continues to lead all the provinces in the country, with a prevalence of 32 % in 1999.[86]

Immunization coverage was almost 50%, below the national target and drop out rate was very high.

TOP occurred mainly among adult, single women, and the procedure done within the first trimester and requested for social and economic reasons.

Provincial clinics (mainly fixed) and hospitals, provide family planning and ANC services to the majority of pregnant women in the province.

There was no provincial data on occupational conditions.

GENERAL DISCUSSION :

To provide a valid basis for difficult health policy decisions, there is a great need for the development of reliable and consistent data on the health status of populations. The World Development Report argues that new approaches to measure health status need be implemented, that quantify not merely the number of deaths but also the impact of premature death and disability on populations, combining them into single units of measurement like DALYs.[23]

The findings from this study confirm the World Bank assertion that South Africa is a middle income country. The epidemiological profile as observed, further confirms that this country is in an epidemiological transition, with radical shift in morbidity and mortality causes from infectious to non-communicable conditions. Analysts like Frenk characterize this situation as a country of incomplete epidemiological transition, in which epidemiologically polarized sub-populations have been left behind.[28]

The emerging epidemics of non-communicable diseases and injuries are becoming more prevalent in this country and KZN is no exception. This is occurring parallel with major infectious diseases like TB, diarrhoea, which have survived the 20th century interventions, is part of the unfinished health agenda, often referred to as a double burden of disease, posing a serious challenge to policy makers in the early decades of the 21st century. In the developing regions, non communicable conditions such as heart diseases, diabetes mellitus etc, as was observed in this study, are fast replacing the traditional infectious diseases and malnutrition as leading causes of disability and premature death. Injuries, both intentional and unintentional, are also growing in importance and could rival the infectious diseases world-wide as a source of ill-health. The rapidity of change will pose another challenge to health care systems and force difficult decisions about the allocation of scarce resources.

Another common cause of disease burden among the non-communicable conditions are malignancies, responsible for a large proportion of years of life lost and years lived with disability. Among cancers, the most significant cause of disease burden is lung cancer, which is projected to become ever more prevalent over the next few decades, if current smoking trends continue, let alone that smoking is a major risk factor for several other non-communicable diseases as well.
The steep projected increase in the burden of non-communicable diseases world-wide, is largely driven by population ageing, augmented by the rapidly increasing numbers of people exposed to smoking and other risk factors like obesity, physical inactivity, unhealthy diet and heavy alcohol consumption.

Despite the extraordinary advances of the 20th century, a significant component of the burden of illness globally still remains attributable to infectious diseases, malnutrition and maternal-child health. These conditions are primarily concentrated in poorest countries and within such countries disproportionately afflict populations that are living in abject poverty. Such infectious diseases, are avoidable, because inexpensive and effective tools do exist to deal with most of them.

Immunization programmes have yielded the most significant changes in child health in the last few decades. Although some vaccines represent the most cost-effective public health intervention, the world does not use them enough, as was the case in KZN. At least 2 million children still die each year from diseases for which vaccines are available at low cost. Similarly, for diarrhoeal diseases, there exist a simple, inexpensive and effective intervention, oral rehydration therapy. Diarrhoeal diseases and pneumonia together account for a high proportion of deaths of children in developing countries.

Among adults, maternal conditions, HIV/AIDS and TB are the three major causes of disease burden in developing countries. The burden of maternal conditions in developing regions is hard to quantify because of the lack of reliable data. Maternal morbidity and mortality is a major public health problem and represent a major and unnecessary burden for which policy makers should increasingly be held accountable.

Basic economic theory of supply and demand suggests that with the evident increase in demand for health care in the country, there should be parallel increase in supply. Within the context of state resource constraints and the problem of escalating costs of health care delivery, it is imperative that all inputs are drawn in to answer pertinent causal questions. To be able to set its priorities correctly, the DoH needs all available information at its disposal. Whilst epidemiological/demographic information is not the only criterion for priority setting, it certainly is one of the crucial inputs. For example, for the DoH to address a policy decision of whether to allocate more resources to PHC services or hospitals, a very contentious decision, information from the EDIS would be very crucial.

Whilst undoubtedly HIV/AIDS is a serious problem in this province, high quality epidemiological data from an efficient EDIS would play an important role in monitoring trends in epidemiological/demographic profile of the province, monitoring effectiveness of different programmes, ensuring efficiency of programmes. Less cost effective programmes would have to be abandoned irrespective of their history and popularity.

SA has been grappling with the problem of devising a correct and simple resource allocation formula for many years. Having tried on different models like RAWP, the currently popular model is that based on diagnostic related groups (DRGs). For effective implementation of this formula, extensive and accurate morbidity data, a responsibility of the EDIS, is required.

Ultimately the EDIS could be seen to function across different sectors of the DoH, e.g. informing the finance department on resource allocation models, human resources on staff redeployment, based on needs formula. The three year plan of the EDIS envisages growth and extending activities in phases as the system becomes more entrenched, more resourceful and making more impact on policy formulation of the province.

CONCLUSIONS :

The demographic and epidemiological profile of the province of KZN is typical of a country in transition, dominated by communicable diseases and conditions related to poverty, alongside chronic diseases of lifestyle and other affluent related conditions. HIV/AIDS is a serious epidemic with very high prevalence and complicating the diseases patterns. The HIV/AIDS complications remain unquantifiable from the existing incomplete data.

There is a universal lack of information culture in the province, and data quality is consequently compromised.

A lot of data from clinics and hospitals is collected in an unco-ordinated manner, poorly processed, and not used locally and provincially.

With training and support, there is a huge potential for improvement in data management, as evidenced by the high degree of motivation by the staff at institutions.

RECOMMENDATIONS

A. GENERAL RECOMMENDATIONS :

A1. Against a backdrop of diverse political, cultural and environmental conditions, and the changing demographic and epidemiological profiles, the DoH needs, more than ever, to rely on rational and objective information to shape its future policy decisions.

A2. The DoH should encourage, support and respond to scientific evidence on the health status of the population of KZN. This reliance on scientific evidence should be manifest in policy development and implementation that will effectively and efficiently address the health needs of its population.

A3. The DoH should invest resources in the material support of existing informatics structures and the development of information systems that can be used to shape its policies.

A4. Over a three year period establish a fully fledged Epidemiological/Demographic Unit (Unit) as suggested by the 3 year plan. (Appendix 6)

B. SPECIFIC RECOMMENDATIONS :

1. Top management should commit the DoH to support the EDIS to realize its goal of effectively supporting and informing rational management and policy decision-making.

    1.1 Adequate resource allocation to the Unit
    1.2 Open lines of communication between the Unit and top management structure.
    1.3 Delegate enough powers to the Unit to take initiatives for effective and efficient functioning.

2. Close co-operation and collaboration between the Unit, different programmes, Informatics and other sectors of the DoH..

    2.1 The Unit must be informed of, and where possible take charge of surveillance, surveys and evaluation activities in different programmes.

    2.2 All epidemiological data collected by different programmes be made available to the Unit for inclusion into the provincial data base.

3. Decentralisation of information system to the lowest level of the DoH should be prioritised. This will ensure improved quality of data from hospitals and clinics.
3.1 Ongoing training of facility staff on the importance of information
3.2 Training at facility level to ensure utilization of information locally
3.3 Appointment of dedicated person/s at facilities for information.
3.4 Appointment and training of District Information Officers (DIOs) on basic epidemiology to be able to analyse district data, supervise and monitor district information in their respective districts.

4 Data collection to be intensified at all institutions, and monthly epidemiological or morbidity data be collated in a standardized data collection sheet, in order to monitor trends.
4.1 Detailed morbidity and mortality data from institutions
4.2 More details on the causes and forms of trauma, poisoning and abuse
4.3 More detail on HIV/AIDS prevalence.
4.4 Vital Registration data to be improved throughout the province.

5. Further studies to quantify the effects of co-infection between HIV/AIDS and other infections, and impact on institutions, be conducted on an ongoing basis.

6. Data should flow from institutions to DIOs, to Regional Information Officers and finally to the Unit; but in the absence of these structures, to be sent directly from facilities to the Unit.

7. The DoH to re-prioritize resource allocation to improve PHC services.
   7.1 Facilitate or fast track implementation of District Health Systems with appropriate resource allocation.
   7.2 Human Resources Development Directorate to:
   7.2.1 Re-strategize on appropriate training programmes to focus on PHC, particularly primary level of prevention.
   7.2.2 Empower institution staff with skills to process and utilize their facility data at their institutions.
   7.2.3 Consider scientific studies e.g. workload and efficiency studies, skills audit studies, to assist a process of re-deploying appropriate and relevantly trained staff to primary care centres.

8 The MEC or Head of the DoH to collaborate with the respective MECs or Heads of Transport, Social Welfare, Education, and Police Departments in developing intervention strategies.

REFERENCES :

1. Green A. An Introduction to Health Planning in Developing Countries. 1994.

2. Griffin RW. Management 3rd Edition. 1990. P663 –681.

3. Hilleboe HE, Barkhuis A, Thomas WC. Approaches to National Health Planning. Albany. New York.

4. Technical Public Health Paper 46 – WHO Geneva 1972

5. Modern Management Methods and the Organization of Health Services –Public Health Papers 55 –WHO- Geneva 1974

6. WHO Technical Report Series; 1967. No 350.

7. Hilleboe H.E., Schaefer M. 1967. Papers and Bibliography on Community Health Planning, Albany, New York.

8. Hilleboe HE, Schaefer M 1968. Comprehensive Health Planning Conceptual and Political Elements. Med. Times (NY) 96.

9. United Nations, Economic Commission for Asia and the Far East. 1964. Report of the Conference of Asian Economic Planners. Second Session. Bangkok. Document E/CN.11/673.

10. Bogetyrev ID. Director, Semasko All-Union Institute of Social Hygiene and Organization of Public Health. Moscow. USSR.

11. Rojtman. MP. Chief, Section of Economic Studies, Semasko All-Union Institute of Social Hygiene and Organization of Public Health. Moscow. USSR.

12. Bogatyrev. ID. 1967. Morbidity among urban populations and Design Standards in therapeutic and Preventive Care. Moscow. USSR.

13..Popov. GA 1971. Principles of Health Planning in the USSR. Geneva. WHO (Public Health Paper No 43, pp 121-128.

14. Normand C. Technical Note on the Economics of the demand for and supply of health care goods and services : Part 1 : Demand in Working paper on social health insurance planning, ILO, Geneva. 1992.

15. Abel-Smith B. An Introduction to Health Policy, Planning and Financing. London. 1999.

16. HMSO. Report of the Committee on Abuse of Social Security benefits, Cmnd. 5228, p. 66.

17. McKeown T. Medicine in Modern Society, Allen and Unwin, London. 1965.

18. Loudon I. Medical Care and the General Practitioner 1750-1850, Clarendon, London. 1986.

19. Ayers GM. England's First State Hospitals 1867-1930. Wellcome Institute, London. 1971.

20. McKeown T. The Role of Modern Medicine, Blackwell, Oxford. 1979.

21. Matsaganis M. An economic approach to international and inter-regional mortality variations with special reference to Greece. (Unpublished PhD thesis, University of Bristol).

22. Cumper G. The Economic of Health in Developing Countries. Oxford. 1985.

23. Halstead SB, et al. Good Health at Low Cost, Rockefeller Foundation, New York. 1987.

24. World Health Organisation. Intersectoral Action for Health. Geneva. 1976.

25. World Bank. World Development Report 1993. Issues in Health. Washington DC

26. Oakley A. The Captured Womb, Blackwell, Oxford. 1984.

27. Gwartkin DR. et. al. can health and nutrition interventions make a difference ? Overseas Monograph no 13. 1980.

28. Frenk J. et al. Elements for a theory of the health transition. Health Transition Review, Vol, no1. 1991.

29. Potts M. family Planning,demography and safe motherhood, News on Health Care in Developing Countries, Uppsala, Sweden, no1. 1993.

30. Whitehead M. The Concepts and Principles of Equity and Health. WHO, Copenhagen. 1990.

31. World Health Organisation. Intersectoral Action for Health. Geneva. 1986.

32. World Health Organisation. Financing Health Developments, (HSC) Geneva. 1987.

33. Centre of the Study of Health Policy. A National Health Service for South Africa: The Case for Change. Witwatersrand University, Johannesburg. 1985.

34. Whitehead M. The Health Divide, Penguin, Harmondsworth. 1992.

35. Waldron I. Why do women live longer than men? Social Science and Medicine, Vol 24. 1987.

36. Leviathan U and Cohen J. Gender differences in life expectancy among Kibbutz members. Social Science and Medicine. Vol 21. 1985.

37. Department of Health, Pretoria. A White Paper for the Transformation of Health Services. 1996

38. Department of Health, Pretoria. A Policy for the Development of a District Health System for South Africa. 1995

39. African National Congress. Reconstruction and Development Programme. 1994

40. Department of Health. National Health Information Systems for South Africa Report. 1997.

41. Knox EG. Epidemiology in Health Care Planning. 1979 : pp 111 - 114.

42. Florey CV, Weddell JM, Leeder SR. The Epidemiologist's Contribution to Medical Care Planning and Evaluation. Aust. N.Z. J..Med 1976 ; 74 - 78.

43 Yach D, Botha JL. Epidemiological Research Methods. SAMJ 1986 ; 5 : 267-8.

44. Katzenellenbogen J, Joubert G, Yach D. Introductory Manual for Epidemiology in Southern Africa.

45 The African National Congress. A National Health Plan for South Africa. 1994.

46 Van Rensberg HCJ, Fourie A, Pretorius E. Health Care in S.A. Structure and Dynamics. Academica, 1992 ; 126.

47 Bradshaw D, Botha H, Joubert G, Pretorius JP, Van Wyk R, Yach D. Review of South African Mortality (1994). Parow : S.A.M.R.C. 1987

48 Allen RW, Von Karolyi I., Hospital Planning Handbook (1976) pp 84 - 85.

49 Department of Health, KwaZulu-Natal. Health Informatics Bulletin. 1998.

50 Department of Health, KwaZulu-Natal. Pietermaritzburg-Msunduzi 1996 Annual Report. 1996.

51 Department of Health, KwaZulu-Natal. Salmonella, Shigella, Cholera Statistics. 1998.

52 – 68 Department of Health, Pretoria. Statistical Notes. Oct 1997 - Dec 1998.

69 – 74 Department of Health, Pretoria. Epdemiological Comments. Dec 1997- Apr 1998.

75 Department of Health, Pretoria. Termination of Pregnancy in KwaZulu-Natal. 1999. (Unpublished).

76 Department of Health, Pretoria. Provinces Health Information Systems NHISSA Report. 1999

77 Statistics South Africa, Pretoria. The People of South Africa; Population Census, 1996. 1998.

78 Department of Health. Vital Registration. 1998.

79 National Committee on Confidential Enquiries into Maternal Deaths. Department of Health. Interim Report on Confidential Enquiries into Maternal Deaths in South Africa. 1998.

80 Department of Labour, Compensation Fund Annual Report. 1997.

81 Workmen's Compensation Act, 1941. Report on the 1990 Statistics.

82 Workmen's Compensation Act, 1941. Report on the 1991 statistics.

83 Department of Health. 1998 National HIV Sero-Prevalence Survey of Women Attending Public AnteNatal Clinics in SA.

84. Department of Health. Annual AnteNatal Survey protocol. 1997.

85. Department of Health. Eighth Annual National HIV SeroPrevalence of Women Attending Antenatal Clinic in SA. 1997.

86. Department of Virology, University of Natal, Durban. HIV in KZN.
        (Unpublished).

87. Knight S. Department of Community Health, University of Natal, Durban. Evaluation of Clinic Registers. 1999.

88. Department of Health, Pretoria. Year 2000 Goals, Objectives and Targets. 1998.

89. Department of Health, KwaZulu-Natal. 1999-2004 Five Year Framework for transformation, Increasing Efficiency and Effectiveness. 1999.

90. Occupational Health and Safety Act

91 Compensation for Occupational Injuries and Diseases Act

92 Occupational Diseases in Mines and Workers Act

93 Stats SA. Midyear Estimate 1999

94 Child Health Act No.74, 1993

95 Family Violence Act No.133, 1993

96 de Villiers FPR. SAMJ 86:2. Febr 1996. Accumulating experience in a child abuse clinic.

97 Kempe CH. Child Abuse – the pediatrician's role in child advocacy and preventive pediatrics. AM J Dis child 1978; 132: 225-260

98 Hyslop J. Howard P. De Villiers F. Wagstaff L.A. composite overview of child abuse clinics in Johannesburg. Paper presented at the South African Society for Prevention of Child Abuse and Neglect Conference, Johannesburg, 5-6 July 1990.

99 Winship WS, Key JA, Dawes ME, Jacob WAS. Examination of sexually abused children. S Afr Med J 1987; 71: 437-439.

100 De Jong AR, Rose M. Legal proof of child sexual abuse in the absence of physical evidence. Pediatrics 1991; 88: 506-511.

101 De Villiers FPR. The doctor as witness in child abuse cases. S Afr Med J 1992; 81: 520-523.

102 German DE, Habenicht DJ, Futcher WG. Psychosocial profile of the female adolescent incest victim. Child Abuse Neglect 1990; 14: 429-438.

103 Glaser JD, Hammerschlag MR, Mccormack WM. Sexually transmitted diseases in victims of sexual assualt. N Engl J Med 1986; 315: 625-627.

104 De Villiers FPR, Prentice MA, Bergh AM. Miller SD. Sexually transmitted disease surveillance in a child abuse clinic. S Afr Med J 1992; 81: 84–86.

105 Department of Health, Pretoria, SA. Demographic Health Survey – Report 1999.

106 Marais A el-al Domestic Violence in patients Adele Marais, Pierre J T de Villiers, Andre` T Moller. S. Afr. Med 1999;89;6

107 McLeer SV, Anwar RAH, Herman S, Maquiling K. Education is not enough: A system's failure in protecting battered women. Ann Emerg Med 1989; 18: 651-653.

108 Neufeld B. SAFE Questions: Overcoming barriers to the detection of domestic violence. Am Fam Physician 1996; 53: 2572-2579

109 McCauley J, Kern DE, Kolodner K, et al. 'The battering syndrome': Prevalence and clinical characteristics of domestic violence in primary care internal medicine practices. Ann Intern Med 1995; 123: 737-746.

110 Friedman LS, Samet JH, Roberts MS, Hudlin M, Hans P. Inquiry about victimization experiences: A survey of patient preferences and physician practices. Arch Intern Med 1992; 152: 1186-1190.

111 Council Reports on Scientific Affairs. Violence against women: Relevance for medical practitioners. JAMA 1992; 267: 3184-3189

112 Smith PH, Gittelman DK. Psychological consequences of battering: Implications for women's health and medical practice. N C Med J 1994; 55: 434-439

113 Knowlden SM, Frith JF. Domestic violence and the general practitioner. Med J aust 1993; 158: 402-406

114 Dutton MA. Assessment and treatment of post-traumatic stress disorder among battered women. In: DW Foy, ed. Treating PTSD: Cognitive-Behavioural Strategies. New York: Guilford Press, 1992: 69-97

115 Human Rights Watch Women's Rights Project. Violence Against Women in South Africa: State Response to Domestic Violence and Rape. New York: Human Rights Watch, 1995

116 Stein DJ, Boshoff D, Abrahams H, et al. Patients presenting with fresh trauma after interpersonal violence: I. Alcohol and substance abuse. S Afr Med J 1997; 87: 996-998

117 Colvin M, Kleinschmidt 1. The impact of HIV and AIDS on the medical wards of a tertiary hospital in KZN, SA. (Unpublished Report).

118 Simjee S. Diarrhoea and HIV. Dept of Medicine, University of Natal. 1999. (Unpublished).

119 Buso DL, Jinabhai CC. Demographic and Epidemiological Profile of Durban Metro Area – Report. Department of Community Health, University of Natal, Durban, SA. 1995

120 Buso D. Knowledge, Attitudes and Practises of Private Doctors with respect to National TB Control Programme – A National Survey. Department of Community Health; University of Natal, Durban, SA (Fellowship Thesis) 1998

121 Department of Health, KwaZulu Natal. TB Control Programme in Kwa-Zulu, Pietermartizburg. 1996.

122 Department of Health, South Africa. TB in South: The People's Plague, Pretoria. 1997.

123 Mulou N et al. The rise of private practice: a growing disquiet with public services. Papau New Guinea Med J, 1992.35(3): 171-178.

124 Hooi LN. Case finding gor Pulmonary Tuberculosis in Penang. Med J of Malaysia, Penang. 1994; 49(3): 223-230

125 Ulepkar MW, Rangan S. Private doctors and tuberculosis control in India. Tubercle and lung Diseases, India. 1993. 74: 332-337

126 Ulepkar MW, shepard DS. Treatment of tuberculosis by private general practitioners in India. Tubercle and Lung Diseases, India. 1991. 72: 284-290.

127 Wasserheit JN. Interrelationships between HIV infection and other sexually transmitted diseases. Epidemiological Synergy, 1991; 19;2

128 Cameron DW et al. Female to Male transmission of HIV type 1: Risk factors for seroconversion in men. Lancet 1989; 2; 403-407

129 Trapido ASM et al. Occupational lung diseases in ex-minerworkers. S Afr Med J 1996 ; 86 : 559.

130 La Grange MAC. Occupational lung disease in ex-mineworkers. S Afr Med J 1996; 86 : 841.

131 White N. Occupational lung disease in ex-mineworkers. Who answers the alarm? S Afr Med J 1986; 86 : 1127

132 Mines Health and Safety Act

133 Coetzee et al. Measles vaccination coverage and its determinants in a rapidly growing peri-urban area. S Afr Med J 1990; 78; 733-737

134 WHO Expanded Programme on Immunisation; a global overview. Assignment children 1985; 69/72: 89-104

135 WHO Training for mid-level managers – evaluate vaccination coverage. Geneva. WHO – EPI.

136 Henderson RH, Sundaresan T. Cluster sampling to assess immunization coverage; A review of experience with a simplified sampling method. Bulletin of the WHO, 60; 253-260 (1982)

137 Dyer JJ, Naidoo K. et al. Effect of an immunisation campaign in Natal and KwaZulu on vaccination coverage rates, 1990-1991. S Afr Med J 1996. 86; 158-161

138 de Pinho H, McIntyre D. Cost analysis of abortion performed in the public health sector. Department of Health – Health Systems Research. Pretoria. 1998

139 Gregson S, Zaba B et al. Projections of the magnitude of the HIV/AIDS epidemic in Southern Africa. Conference on the Socio-Demographic Impact of AIDS in Africa. 1997.

Appendix :1

Figure 1.1   Indian Population

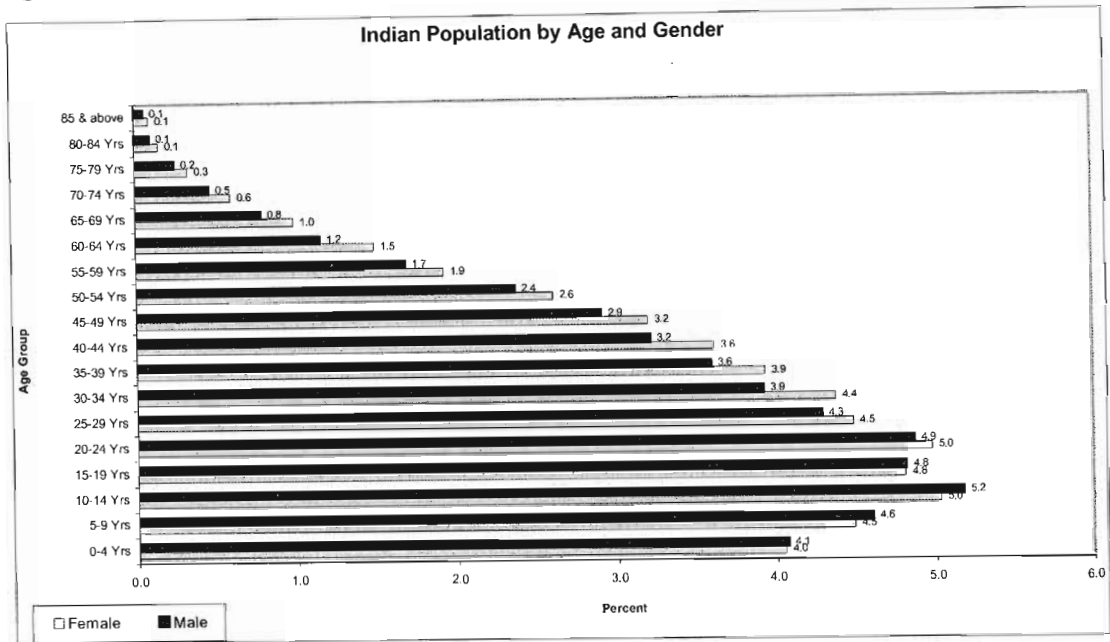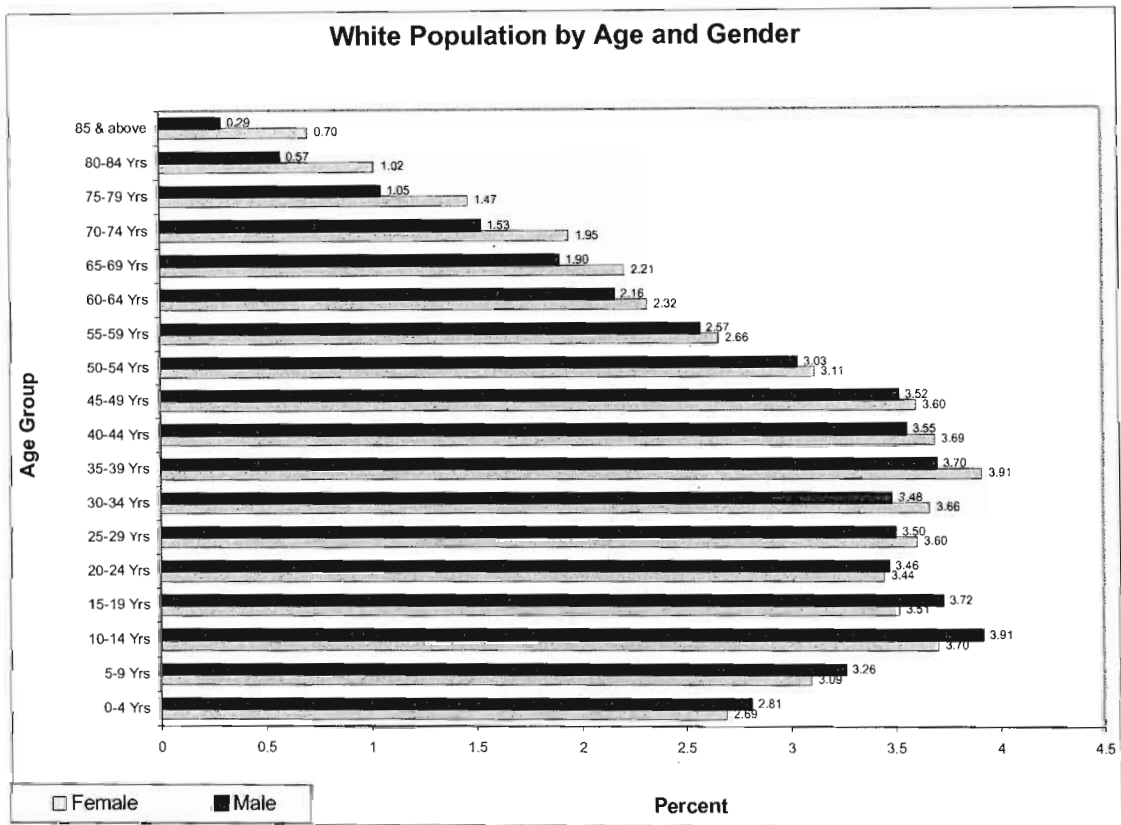Indian Population by Age and Gender

Figure 1.2   White Population

White Population by Age and Gender

Figure 1.3 African Population

African Population by Age & Gender
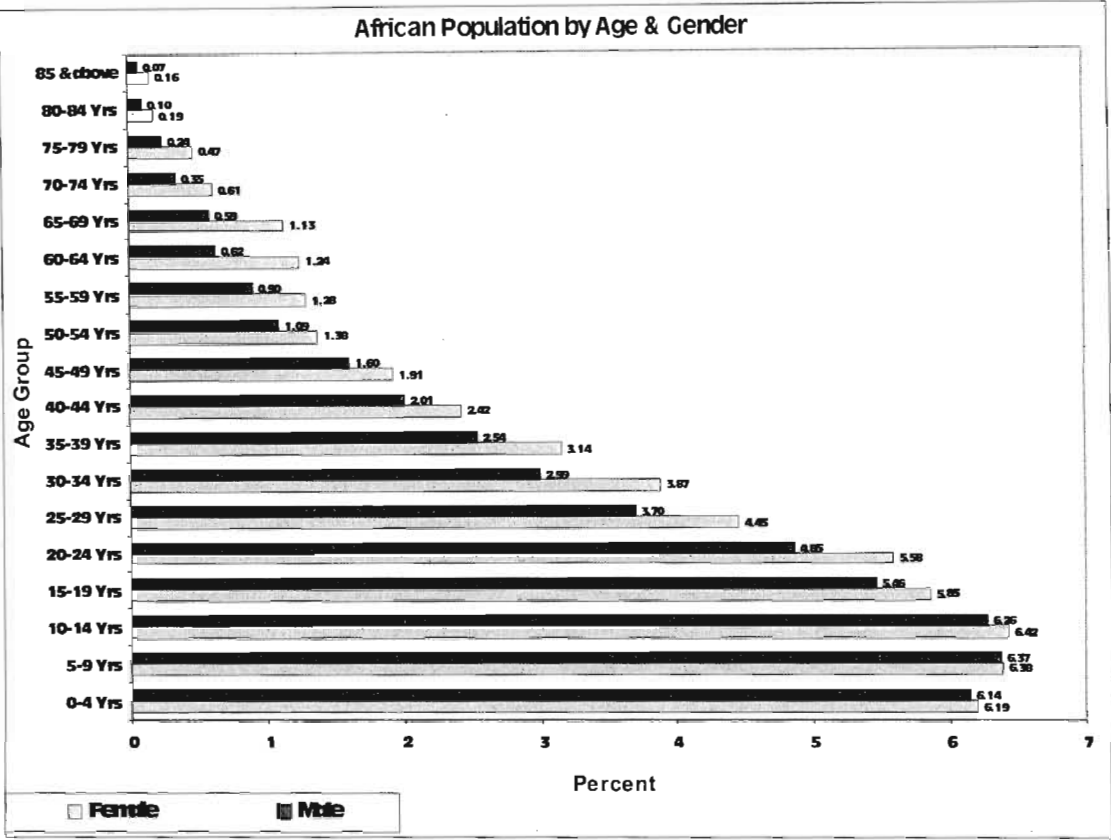
Figure 1.4 Coloured Population

Coloured Population by Age & Gender
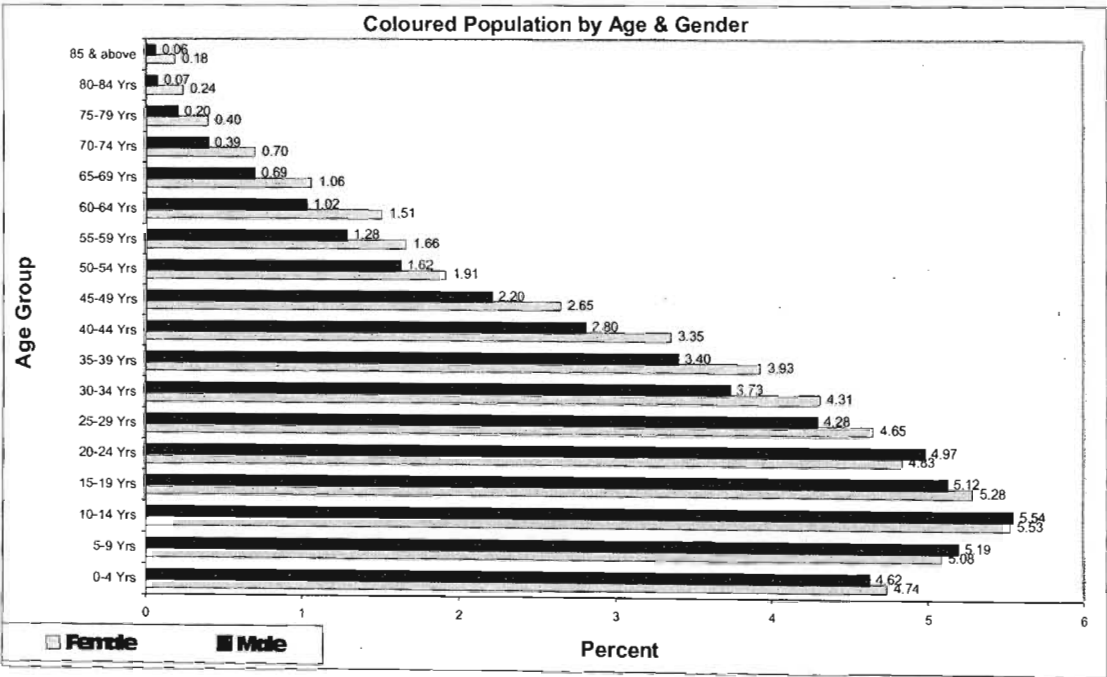
Table 1: NOTIFIABLE DISEASES BY HEALTH REGION: APRIL'98- MARCH'99

Disease	Ilembe/Metro	Indlovu	Ugu	Umzinyathi	Uthukela	Uthungulu	Zululand	Outside South Africa	Unknown	Grand Total
AFP	1	0	1	1	0	0	0			3
Cholera	0	0	0	0	7	5	0			12
Congenital syphilis	0	0	1	0	0	0	0			1
Diphtheria	2	1	0	0	0	0	0			3
Food poisoning	1	0	0	0	1	0	0			2
Lead poisioning	0	0	1	0	0	0	0			1
Leprosy	3	7	1	1	0	3	0			15
Malaria	127	5	20	37	0	8 024	31	0	7	8 251
Measles	15	18	99	73	4	2	13			224
Meningococcal infection	5	6	0	2	3	18	0			34
Rabies	3	0	0	0	0	1	0			4
Rheumatic fever	0	1	0	0	0	0	0			1
Smallpox	0	0	0	0	0	2	17			19
TB bones & joints	1	2	0	0	1	1	0			5
TB genito urinary system	1	0	0	0	0	1	0			2
TB intestines	3	1	0	0	0	1	0			5
TB meninges, CNS	6	15	0	0	0	4	0	1	0	26
TB miliary	12	17	1	0	0	7	0			37
TB other organs	33	33	4	1	2	51	5			129
TB other respiratory	371	8	3	0	0	2	0			384
TB primary	95	6	29	7	0	349	21			507
TB pulmonary	3 389	1 533	1 009	527	37	2 404	1 026	74	0	9 999
Tetanus	1	6	0	1	0	1	0			9
Typhoid fever	2	3	10	3	0	11	5			34
Viral hepatitis A	24	56	5	1	0	3	2			91
Viral hepatitis B	13	60	10	2	0	1	3			89
Viral hepatitis non A,B	0	1	0	0	0	2	0			3
Viral hepatitis unspecified	1	0	1	1	0	3	0			6
Total	4 109	1 779	1 195	657	55	10 896	1 123	75	7	19 896

2. CAPACITY BUILDINGS AT INSTITUTIONS

Table 2.1   Quality of Presentation of Workshop by Dr Buso

REGION	QUALITY OF PRESENTATION BY DR BUSO				
	VERY POOR	POOR	FAIR	GOOD	VERY GOOD
DURBAN	0	0	0	22	20
ULUNDI	0	0	0	4	11
JOZINI	0	0	0	7	8
EMPANGENI	0	0	3	10	12
PORT SHEPSTONE	0	0	0	9	8
TOTAL	0	0	3	52	59

Table 2.2   Effect of the Presentation for Ensuring Quality Obtained

REGION	EFFECT OF ABOVE PRESENTATION FOR ENSURING QUALITY OBTAINED				
	HIGHLY DEMOTIV	DEMOTIV	NO CHANGE	MOTIVATED	HIGHLY MOTIV.
DURBAN	2	0	1	21	18
ULUNDI	0	0	0	5	10
JOZINI	0	0	0	5	10
EMPANGENI	0	0	2	10	13
PORT SHEPSTONE	0	0	0	11	6
TOTAL	2	0	3	52	57

Table 2.3   The Effect of Other Health Indicators

REGION	EFFECT OF OTHER HEALTH INDICATORS				
	HIGHLY DEMOTIV	DEMOTIV	NO CHANGE	MOTIV.ATED	HIGHLY MOTIV.
DURBAN	0	0	4	30	7
ULUNDI	1	0	0	5	8
JOZINI	0	0	2	7	6
EMPANGENI	0	0	0	16	8
PORT SHEPSTONE	1	0	1	9	3
TOTAL	2	0	7	67	32

Table 3. 1   DPT DROP OUT RATE: APRIL 1998 TO MARCH 1999

Health District	DPT1	DPT3	Drop Out Rate
Umbumbulu	1 541	1 373	11
South	2 353	2 161	8
North / South Central	20 170	16 145	20
North	4 348	4 148	5
Lower Tugela	1 959	1 925	2
Ndwedwe	1 289	1 258	2
Inner / Outer West	8 253	7 112	14
Ilembe / Metro (Durban)	**39 913**	**34 122**	**15**
Camperdown / Richmond / Ixopo	2 440	2 570	-5
Kranskop / Umvoti / Newhanover	2 929	2 868	2
Impendle / Pholela / Underberg	1 270	1 297	-2
PMBurg / Mooi R / Lions R / Vulindlela	10 793	10 164	6
Indlovu (Pietermaritzburg)	**17 432**	**16 899**	**3**
PortShepstone / Alfred County	7 264	7 061	3
Umzinto / Vulamehlo	6 138	6 020	2
Mount Currie	4 045	3 780	7
Ugu (Port Shepstone)	**17 447**	**16 861**	**3**
Msinga	2 262	1 669	26
Nquthu / Dundee / Glencoe	7 650	7 533	2
Newcastle / Dannhauser / Utrecht	1 899	2 033	-7
Umzinyathi (Newcastle)	**11 811**	**11 235**	**5**
Mtshezi / Okhahlamba	7 172	6 562	9
Mnambithi	6 063	5 557	8
Uthukela (Ladysmith)	**13 235**	**12 119**	**8**
Eshowe / Nkandla	10 606	10 404	2
Lower Umfolozi / Hlabisa	15 641	11 441	27
Jozini	8 630	8 932	-3
Uthungulu (Empangeni)	**34 877**	**30 777**	**12**
Mahlabatini / Babanango / Melmoth	3 127	2 925	6
Pongola / Ngotshe / Nongoma	5 986	5 014	16
Vryheid / Paulpietersberg	3 835	3 691	4
Zululand (Ulundi)	**12 948**	**11 630**	**10**
GRAND TOTAL	**147 663**	**133 643**	**9**

Table 3.2 Measles Drop Out Rate: April 1998 – March 1999

Health District	DPT1	Measles	Drop Out Rate
Umbumbulu	1 541	1 288	11
South	2 353	1 994	2
North /South Central	20 170	12 379	179
North	4 348	3 700	33
Lower Tugela	1 959	1 724	18
Ndwedwe	1 289	1 057	3
Inner / Oouter West	8 253	6 817	4
Ilembe / Metro (Durban)	**39 913**	**28 959**	**27**
Camperdown / Richmond / Ixopo	2 440	2 617	- 6
Kranskop / Umvoti / Newhanover	2 929	2 630	24
Impendle / Pholela / Underberg	1 270	997	3
PMBurg / Mooi R / Lions R / Vulindlela	10 793	9 885	5
Indlovu (Pietermaritzburg)	**17 432**	**16 129**	**7**
Port Shepstone / Alfred County	7 264	6 643	10
Umzinto / Vulamehlo	6 138	5 525	15
Mount Currie	4 045	3 308	4
Ugu (Port Shepstone)	**17 447**	**15 476**	**11**
Msinga	2 262	1 647	8
Nqutu / Dundee / Glencoe	7 650	7 323	17
Newcastle / Dannhauser / Utrecht	1 899	1 598	3
Umzinyathi (Newcastle)	**11 811**	**10 568**	**11**
Mtshezi / Okhahlamba	7 172	5 998	19
Mnambithi	6 063	4 848	9
Uthukela (Ladysmith)	**13 235**	**10 846**	**18**
Eshowe / Nkandla	10 606	9 336	8
Lower Umfolozi / Hlabisa	15 641	10 248	62
Jozini	8 630	7 460	3
Uthungulu (Empangeni)	**34 877**	**27 044**	**22**
Mahlabathini / Babanango / Melmoth	3 127	2 979	2
Pongola / Ngotshe / Nongoma	5 986	4 824	30
Vryheid / Paulpietersberg	3 835	3 139	5
Zululand (Ulundi)	**12 948**	**10 942**	**15**
GRAND TOTAL	**147 663**	**119 964**	**19**

REGIONAL MORBIDITY AND MORTALITY PROFILES.

DURBAN REGION:

Figure 2.1   Adult Morbidity Profile

DURBAN REGION ADULT MORBIDITY PROFILE - 1998
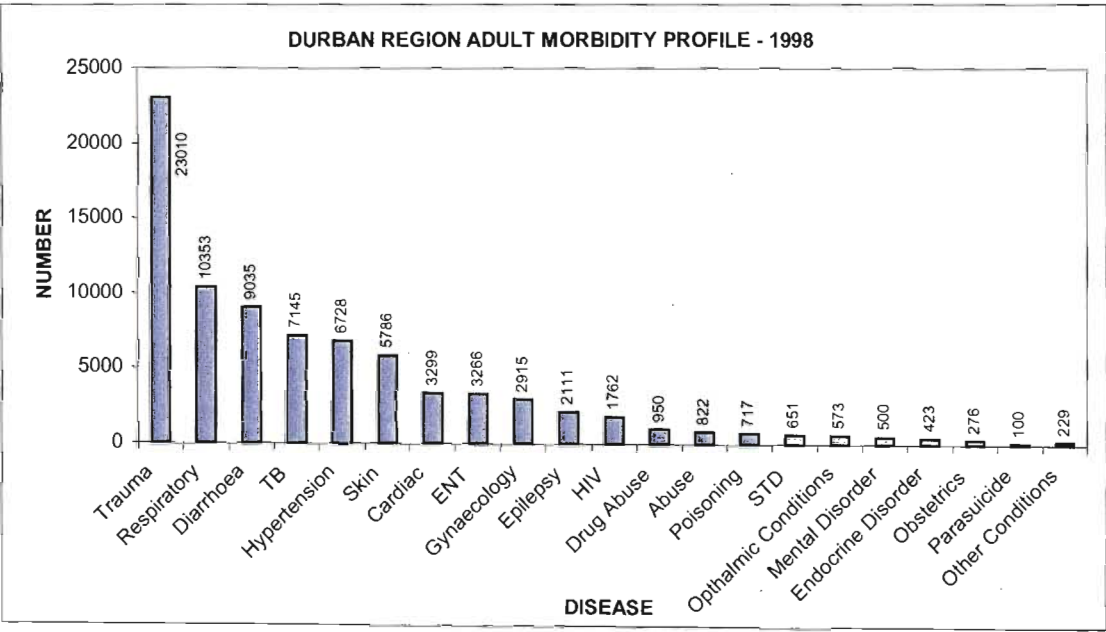
Figure 2.2   Adult Mortality Profile:

DURBAN REGION ADULT MORTALITY PROFILE - 1998
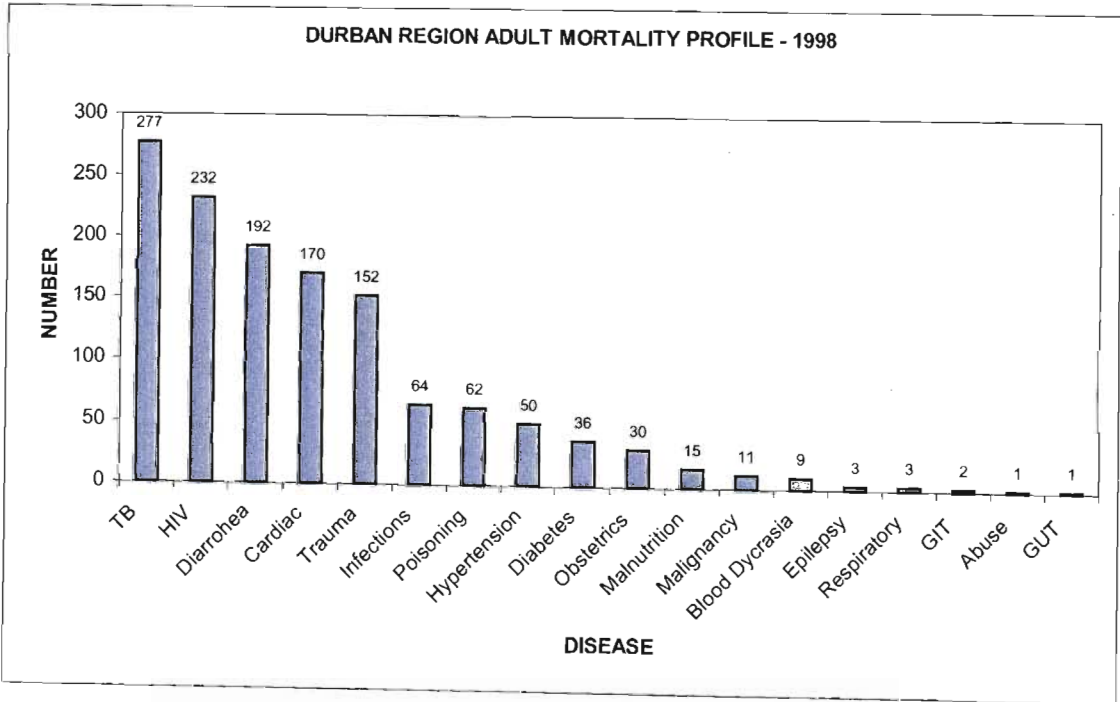
Figure 2.3 Paediatric Morbidity Profile:

DURBAN REGION PAEDIATRIC MORBIDITY PROFILE - 1998
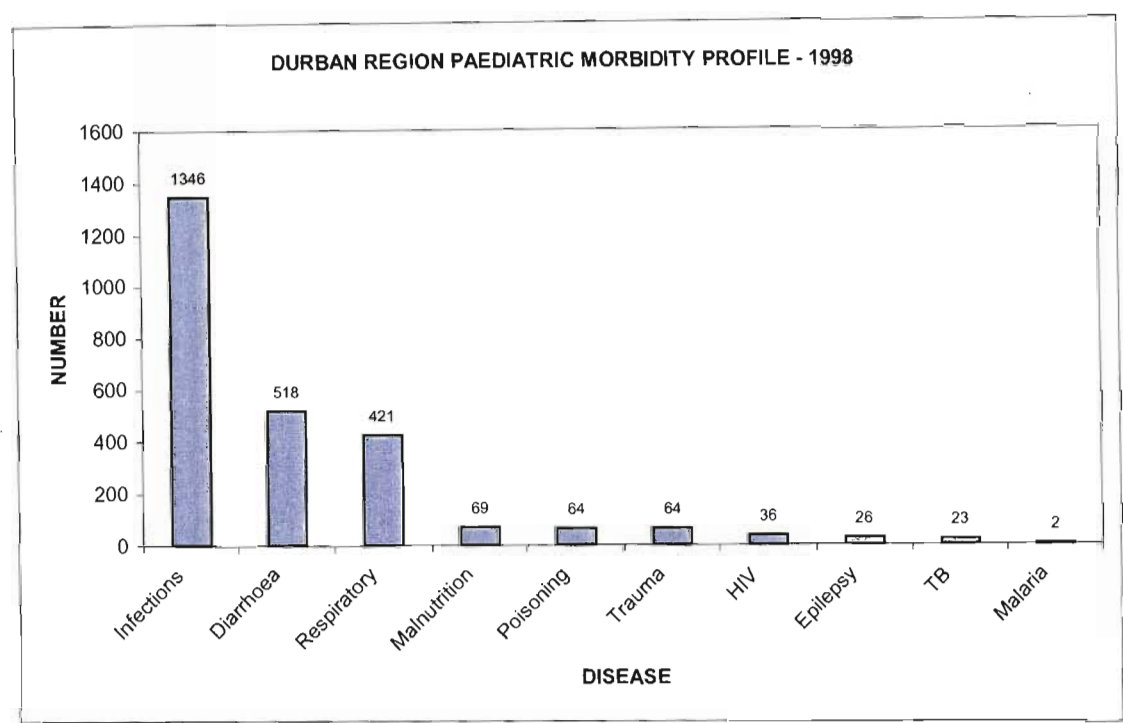
Figure 2.4 Paediatric Mortality Profile:

DURBAN REGION PAEDIATRIC MORTALITY PROFILE - 1998
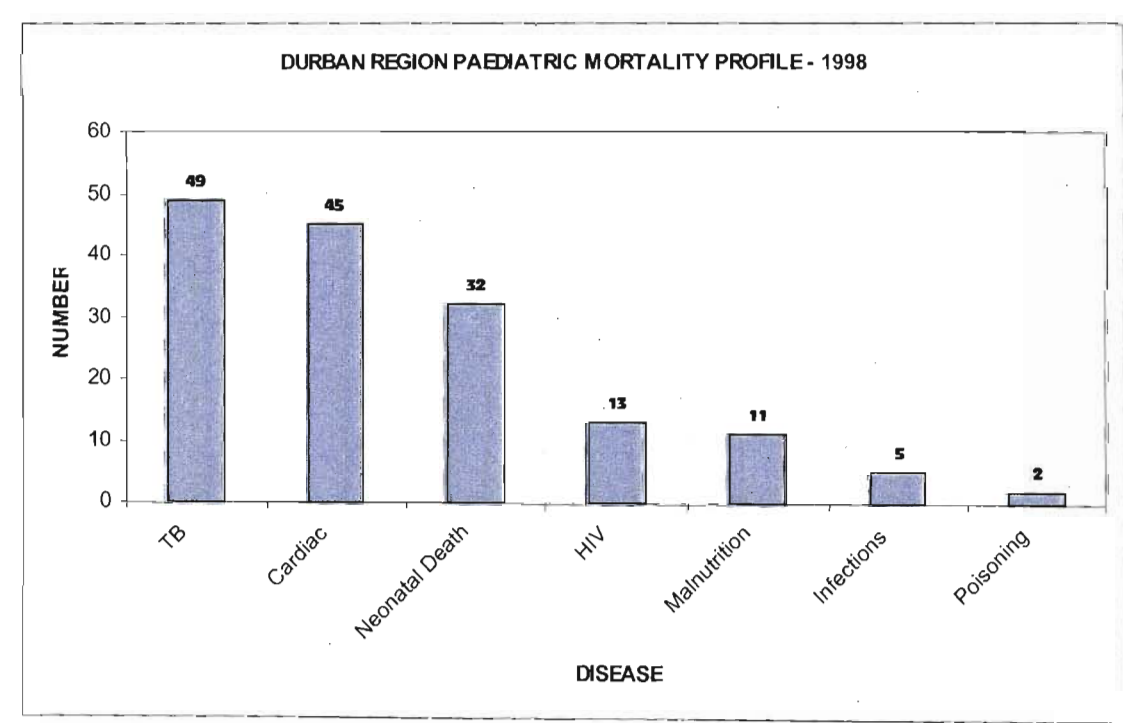
PIETERMARITZBURG:

Figure 3.1   Adult Morbidity Profile:

PIETERMARITZBURG REGION ADULT MORBIDITY PROFILE - 1998

Bar chart showing NUMBER versus DISEASE:

- Obstetrics: 1933
- Cardiac: 1743
- Respiratory: 1461
- GIT: 1047
- Gynaecology: 919
- Arthritis: 772
- Neurological: 570
- Epilepsy: 503
- Diabetes: 469
- Diarrhoea: 467
- Hypertension: 443
- TB: 400
- Trauma: 385
- Malignancy: 253
- Poisoning: 249
- HIV: 175
- Infections: 156
- Blood Dycrasia: 141
- GUT: 71
- Mental Disorder: 53
- Other Conditions: 169

Figure 3.2   Adult Mortality Profile:

PIETERMARITZBURG REGION ADULT MORTALITY PROFILE - 1998

Bar chart showing NUMBER versus DISEASE:

- Cardiac: 475
- Diabetes: 182
- Respiratory: 171
- Diarrhoea: 145
- GIT: 113
- HIV: 93
- Gynaecology: 75
- Neurological: 49
- TB: 49
- Trauma: 47
- Hypertension: 43
- Malnutrition: 39
- GUT: 34
- Malignancy: 34
- Blood Dycrasia: 30
- Obstetrics: 22
- Infections: 18
- Poisoning: 7
- Malaria: 2
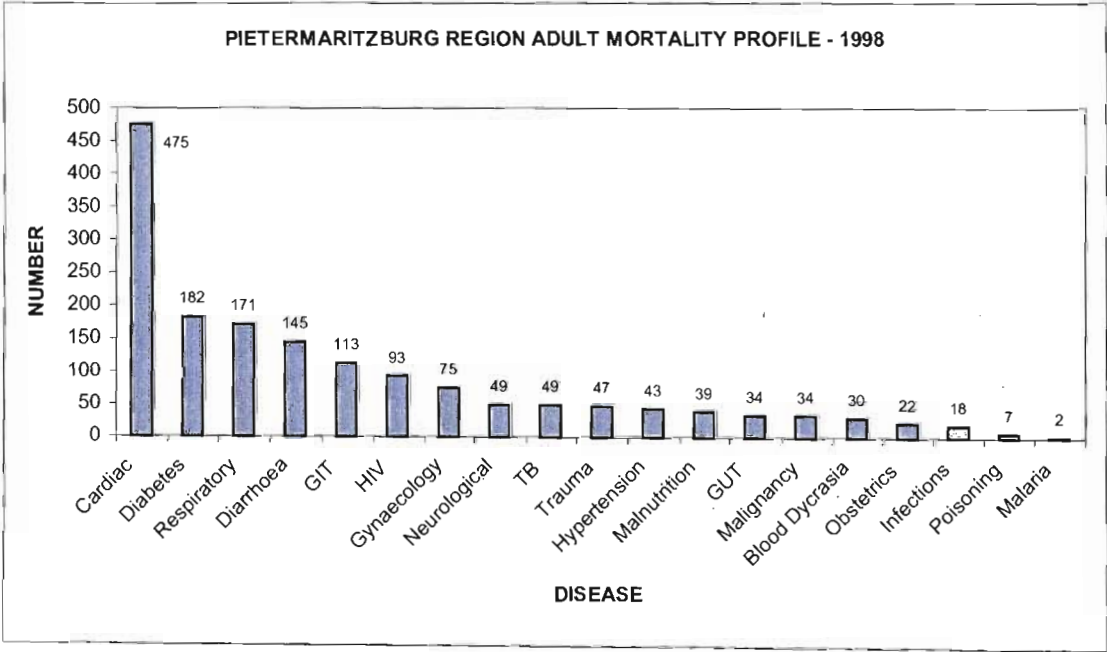
Figure 3.3   Paediatric Morbidity Profile:

PIETERMARITZBURG REGION PAEDIATRIC MORBIDITY PROFILE - 1998

Bar chart with y-axis labelled NUMBER (0 to 800) and x-axis labelled DISEASE:

- Respiratory: 682
- Malnutrition: 442
- Diarrhoea: 296
- Epilepsy: 238
- TB: 187
- HIV: 127
- Trauma: 93
- Infections: 21
- Congenital: 15
- Poisoning: 6
- Diabetes: 4
- Cardiac: 3
- GIT: 3
- Malaria: 1
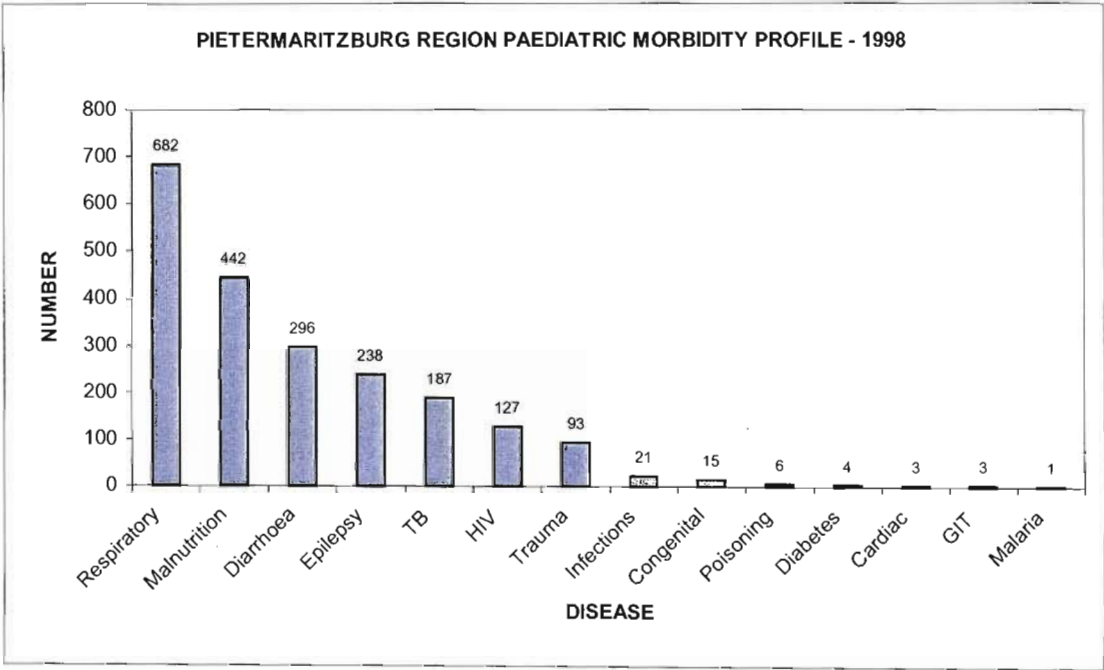
Figure 3.4   Paediatric Mortality Profile:

PIETERMARITZBURG REGION PAEDIATRIC MORTALITY PROFILE - 1998

Bar chart with y-axis labelled NUMBER (0 to 120) and x-axis labelled DISEASE:

- Respiratory: 104
- Neonatal Death: 57
- Diarrhoea: 53
- HIV: 43
- Malnutrition: 22
- GIT: 9
- Infections: 7
- TB: 6
- Diabetes: 2
- Trauma: 2
- Malaria: 1
- Other Conditions: 3

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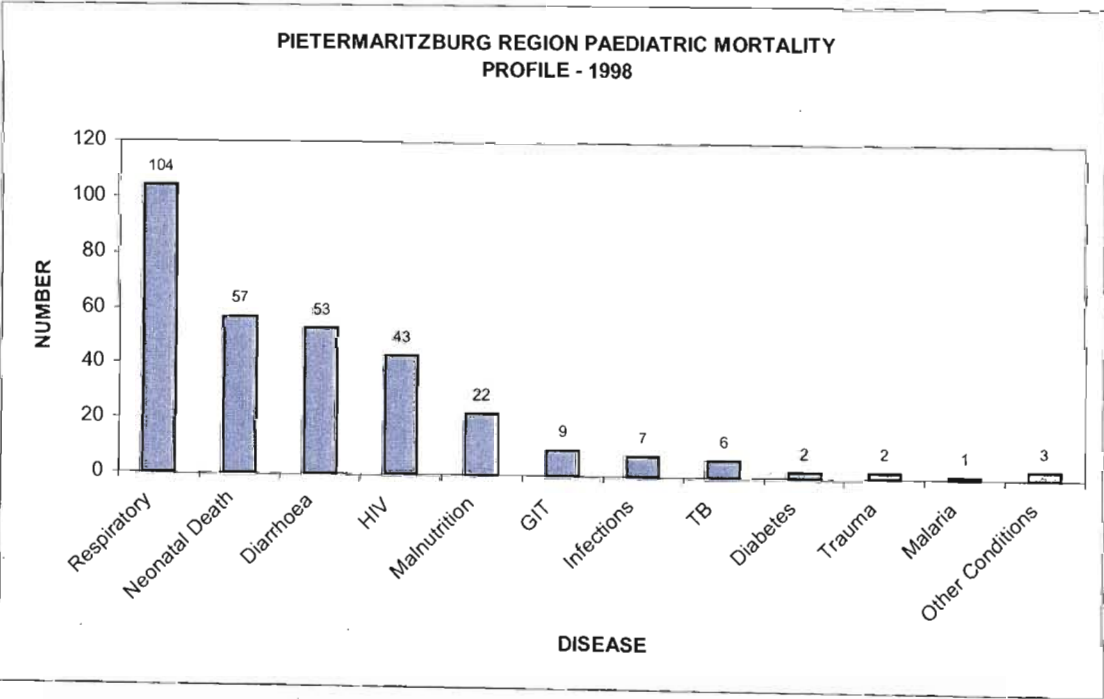
PORT SHEPSTONE:

Figure 4.1   Adult Morbidity Profile:

PORT SHEPSTONE REGION ADULT MORBIDITY PROFILE - 1998

Bar chart showing NUMBER (y-axis) versus DISEASE (x-axis):

- TB: 803
- Trauma: 440
- Respiratory: 374
- Diabetes: 318
- Cardiac: 307
- Diarrhoea: 296
- Infections: 244
- Epilepsy: 131
- Hypertension: 121
- Gynaecology: 105
- GIT: 97
- Malignancy: 82
- Obstetrics: 68
- Mental Disorder: 67
- GUT: 50
- Neurological: 41
- ENT: 40
- Other Conditions: 147
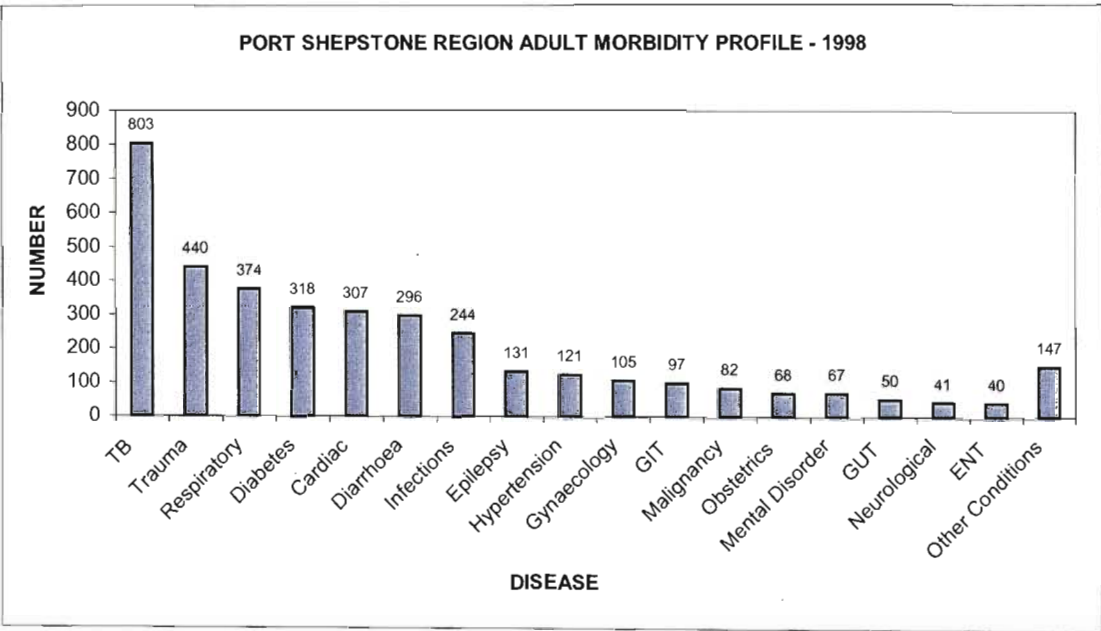
Figure 4.2   Adult Mortality Profile:

PORT SHEPSTONE REGION ADULT MORTALITY PROFILE - 1998

Bar chart showing NUMBER (y-axis) versus DISEASE (x-axis):

- Cardiac: 111
- Respiratory: 107
- TB: 100
- Malignancy: 40
- Diarrhoea: 28
- Infections: 28
- Blood Dycrasia: 16
- GUT: 14
- Trauma: 14
- Diabetes: 13
- HIV: 11
- GIT: 6
- Epilepsy: 4
- Gynaecology: 4
- Neurological: 4
- Hypertension: 2
- Drug Abuse: 1
- Mental Disorder: 1
- Skin: 1

Figure 4.3   Paediatric Morbidity Profile:

PORT SHEPSTONE REGION PAEDIATRIC MORBIDITY PROFILE - 1998

Figure 4.4   Paediatric Mortality Profile:

PORT SHEPSTONE REGION PAEDIATRIC MORTALITY PROFILE - 1998

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LADYSMITH:

Figure 5.1 Adult Morbidity Profile:

LADYSMITH REGION ADULT MORBIDITY - 1998

Figure 5.2 Adult Mortality Profile:

LADYSMITH REGION ADULT MORTALITY PROFILE - 1998

Figure 5.3 Paediatric Morbidity Profile:

LADYSMITH REGION PAEDIATRIC MORBIDITY PROFILE - 1998

Figure 5.4 Paediatric Mortality Profile:

LADYSMITH REGION PAEDIATRIC MORTALITY PROFILE - 1998

EMPANGENI:

Figure 6.1 Adult Morbidity Profile:

EMPANGENI REGION ADULT MORBIDITY PROFILE - 1998

Figure 6.2 Adult Morbidity Profile:

EMPANGENI REGION ADULT MORTALITY PROFILE - 1998
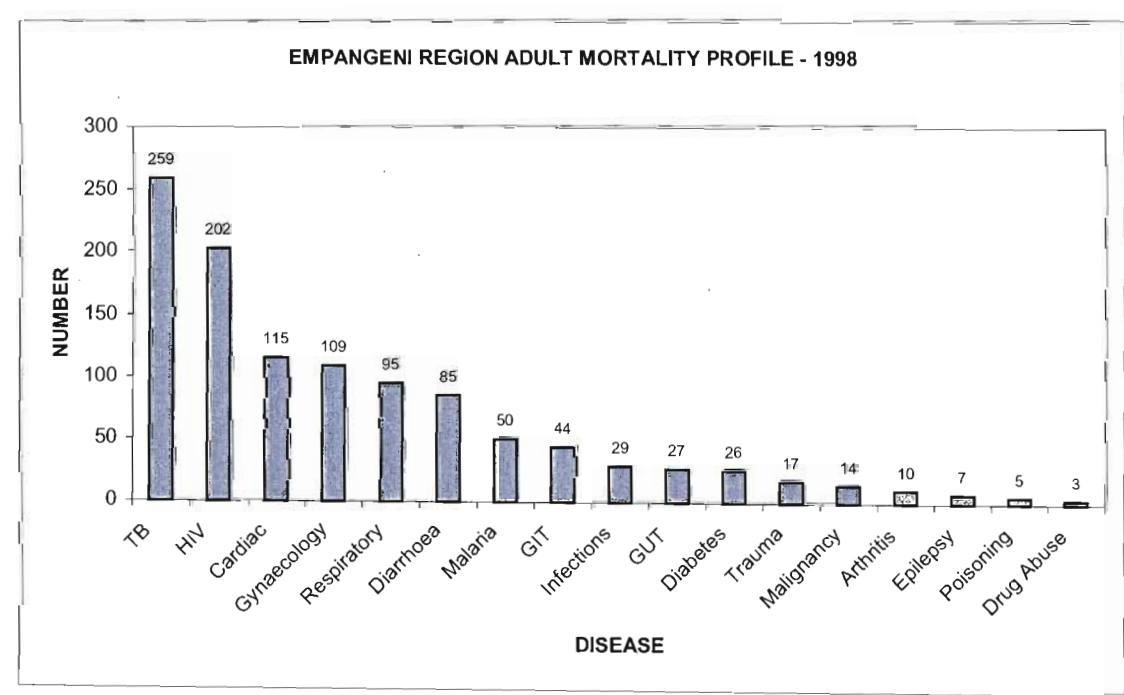
Figure 6.3 Paediatric Morbidity Profile:

EMPANGENI REGION PAEDIATRIC MORBIDITY PROFILE - 1998
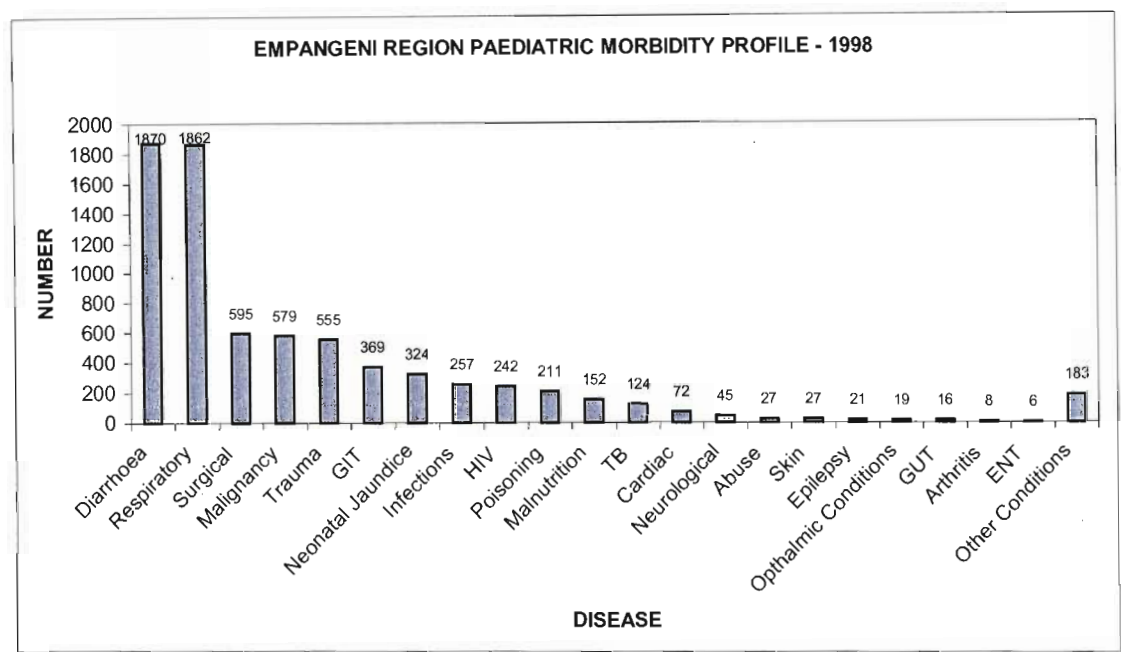
Figure 6.4 Paediatric Mortality Profile:

EMPANGENI REGION PAEDIATRIC MORTALITY PROFILE - 1998
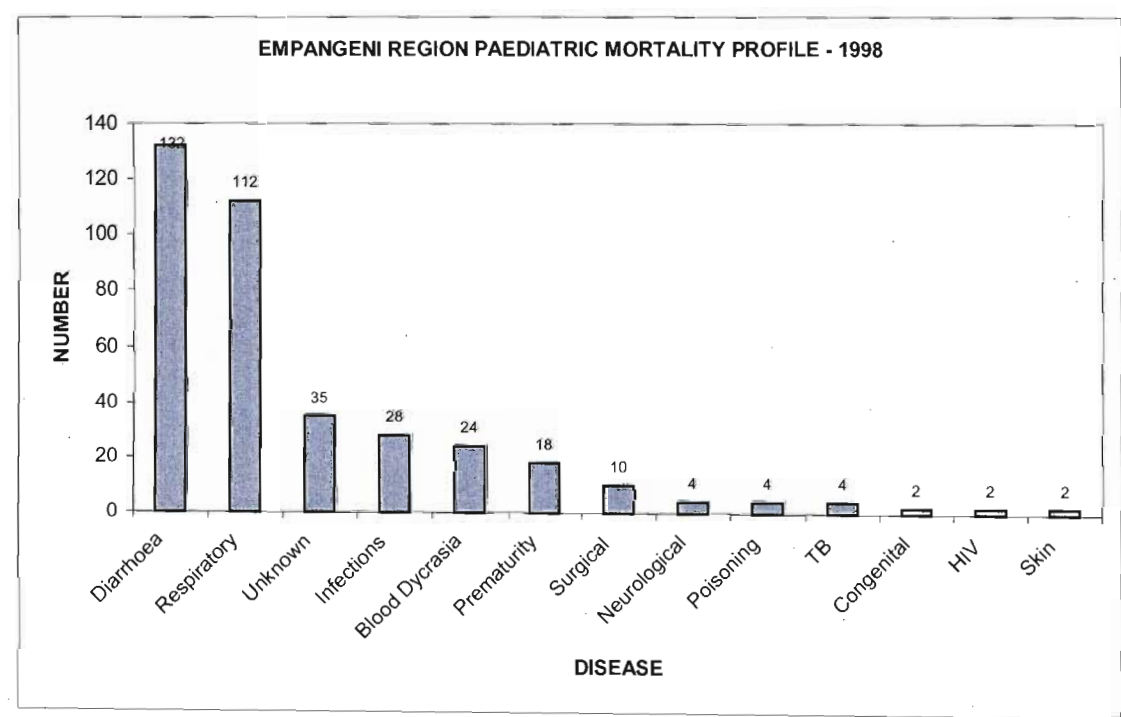
NEWCASTLE:

Figure 7.1 Adult Morbidity Profile:

NEWCASTLE REGION ADULT MORBIDITY PROFILE - 1998
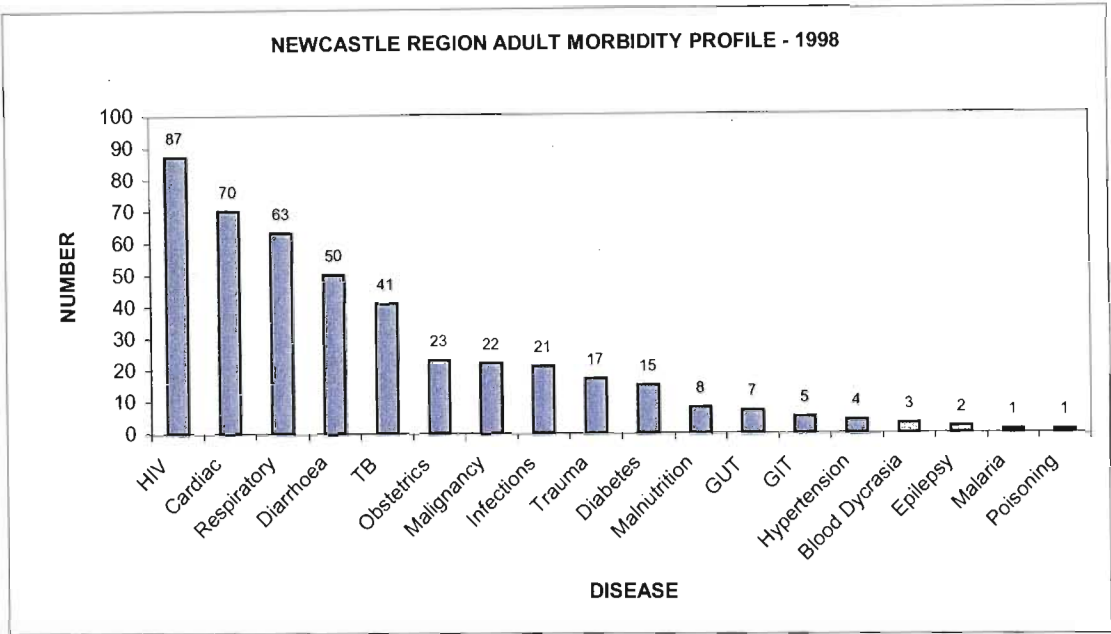
Figure 7.2 Adult Mortality Profile:

NEWCASTLE REGION ADULT MORTALITY PROFILE - 1998
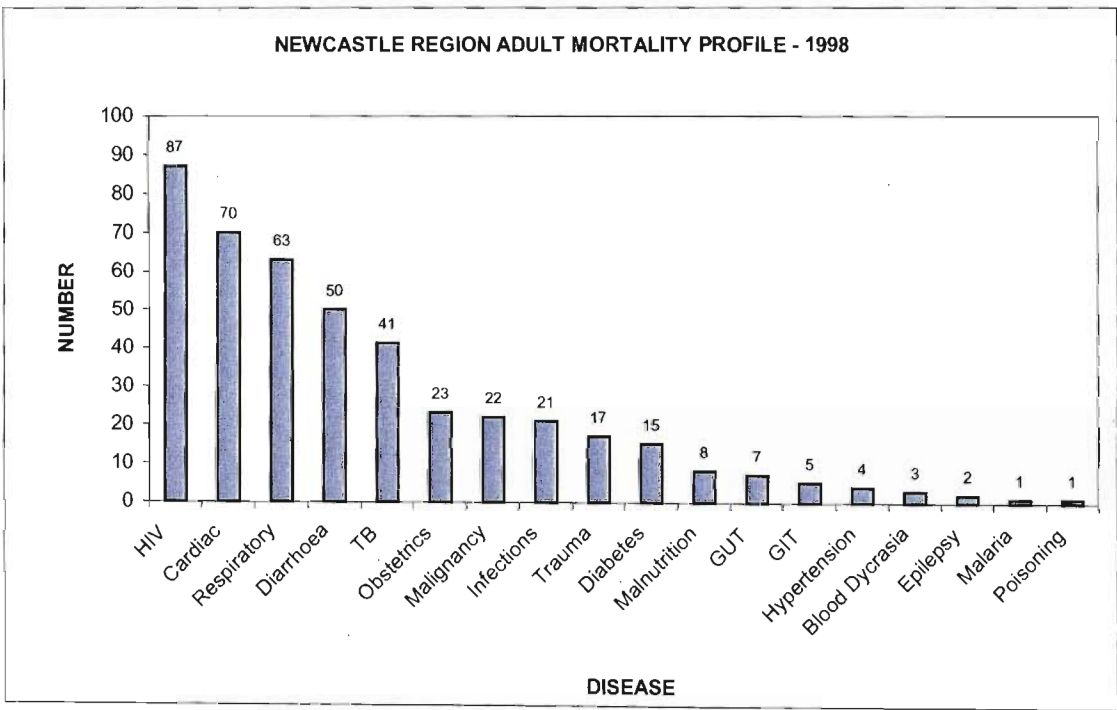
Figure 7.3   Paediatric Morbidity Profile:

NEWCASTLE REGION PAEDIATRIC MORBIDITY PROFILE - 1998
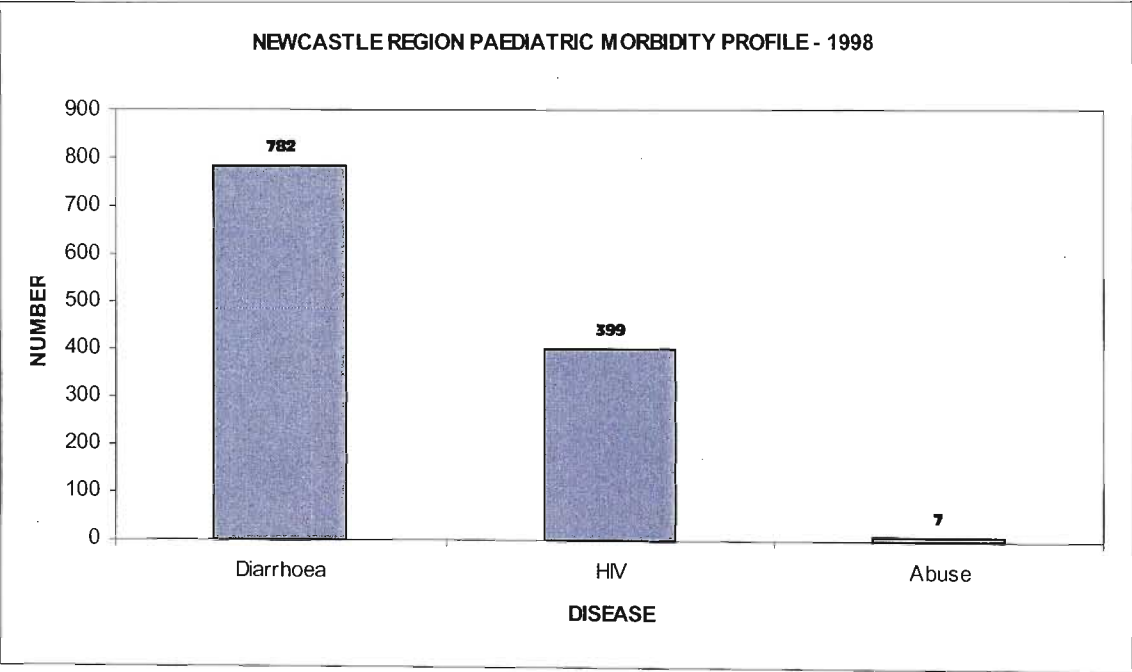
ULUNDI:

Figure 8.1 Adult Mortality Profile:

ULUNDI REGION ADULT MORBIDITY PROFILE - 1998
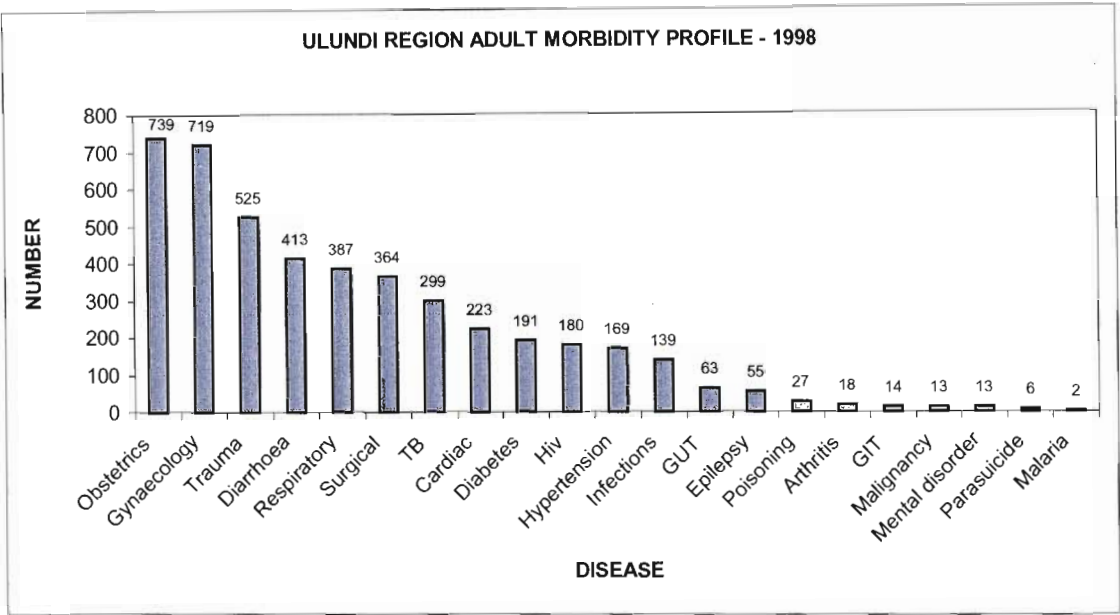
Figure 8.2 Adult Mortality Profile:

ULUNDI REGION ADULT MORTALITY PROFILE - 1998
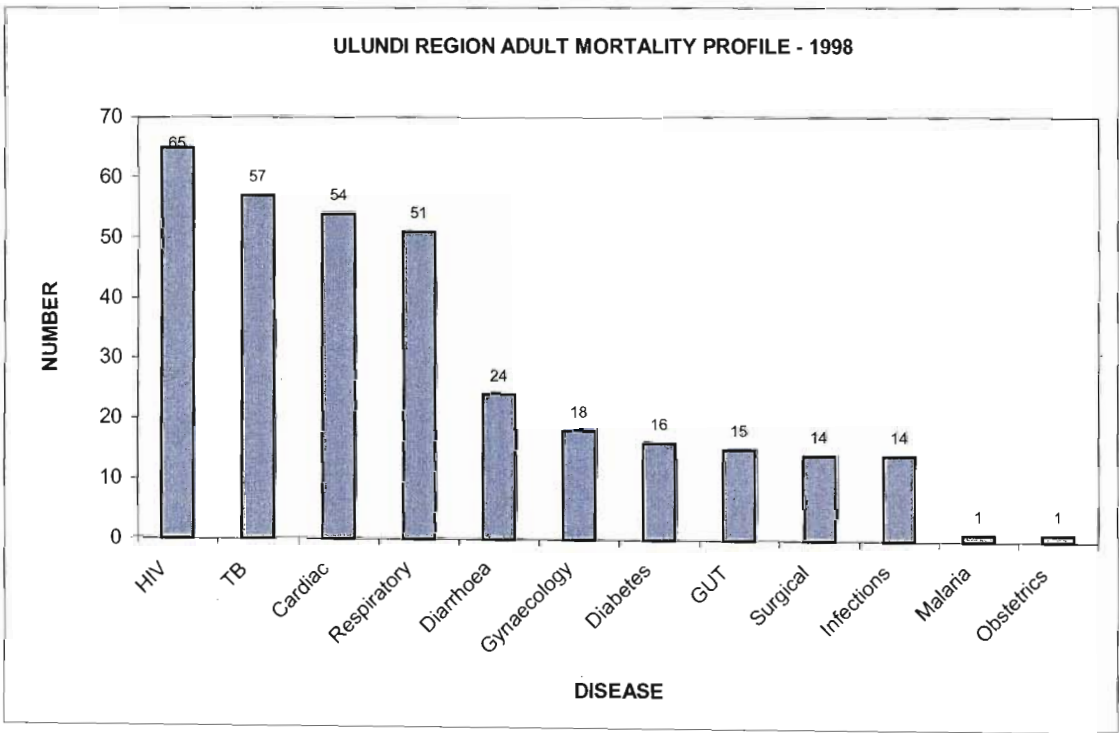
Figure 8.3 Paediatric Morbidity Profile:

ULUNDI REGION PAEDIATRIC MORBIDITY PROFILE - 1998

Bar chart — NUMBER vs DISEASE:
Respiratory 366, Diarrhoea 302, Trauma 215, Infections 120, Poisoning 86, Malnutrition 55, Epilepsy 37, GUT 15, ENT 12, Congenital 9, TB 9, GIT 6, Arthritis 5, Blood Dycrasia 3, Cardiac 2, Malaria 1, Other Conditions 104
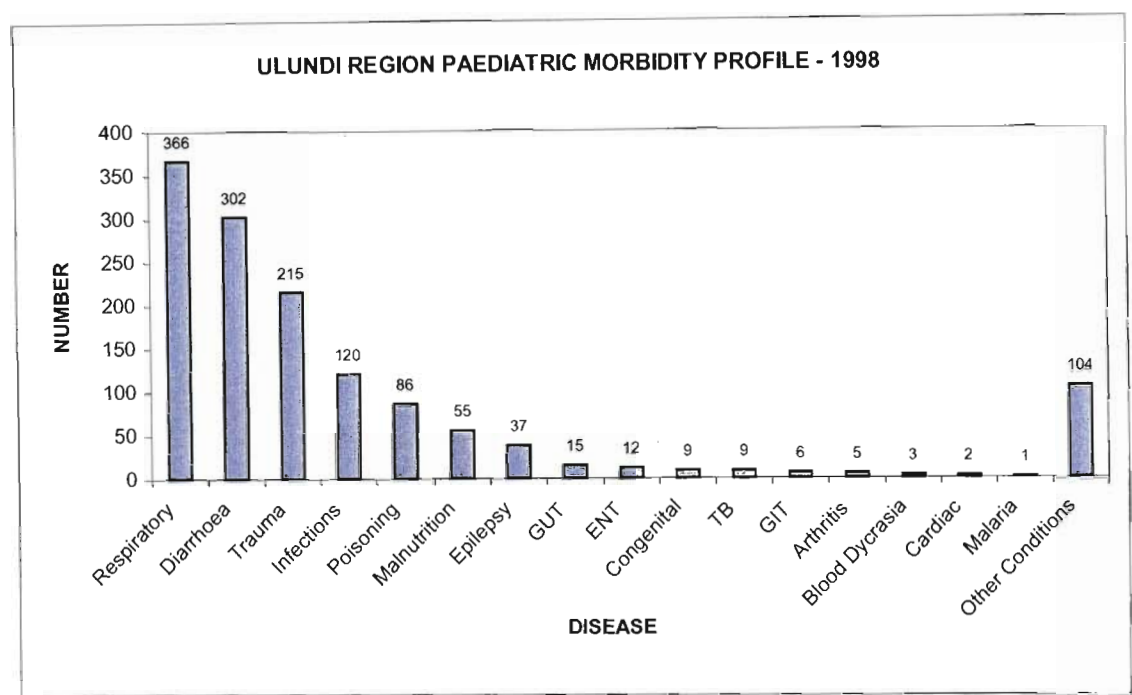
Figure 8.4 Paediatric Mortality Profile:

ULUNDI REGION PAEDIATRIC MORTALITY PROFILE - 1998

Bar chart — NUMBER vs DISEASE:
Neonatal Death 30, Diarrhoea 26, Malnutrition 22, Respiratory 20, Poisoning 8, HIV 5, Cardiac 1, Infections 1, Malnutrition 1