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District health care at Tari until 1991

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SUMMARY

This paper traces the history and development of health care at Tari up until 1991. It focuses on Tari District Hospital as the hub of district health care and describes conditions for health delivery in the district. Patterns of morbidity and mortality are contrasted between the hospital and the community, using Tari Research Unit data for comparison. Health improvements achieved over the two decades before 1991 are due mainly to curative health care. However, the pattern of disease has changed little. Pneumonia is highly prevalent and is associated with high case fatality rates among infants in hospital. Improvements in health status are only likely if living conditions improve and community-based responses develop. The implementation of a primary health care approach, and specific measures to improve hospital and health service outcomes would also assist. Health services are under severe pressure from population growth coupled with declining budgets, the breakdown in law and order, and the burdens of HIV/AIDS and noncommunicable disease.

Introduction

The health status of the people of Papua New Guinea (PNG) has improved greatly over the past 50 years following the establishment of a comprehensive health service provided by both the government and church health agencies. This is a three-tier structure based on village aid posts, district health centres and provincial hospitals, aided by mobile maternal and child health clinics. Despite the widely dispersed nature of the population and the difficult geographical terrain in many rural areas, health services are relatively easily accessible to over 95% of the population, and a good referral network exists. Impressive gains have been made in reduction of mortality, in some cases reversing actual population decline. This improved health status has been achieved in the absence of significant social or economic changes and is almost entirely due to the provision of basic medical care, primarily with penicillin and antimalarial drugs. Despite these gains, however, the pattern of disease in the community has remains remained almost unchanged.

This paper reviews briefly the history and development of district health care at Tari up until 1991. It considers the role of the district hospital and evaluates district health care in terms of hospital and community-based data.

History and development of health care in Tari

A permanent administrative presence was established in the Tari District in 1952 with the appointment of a patrol officer and medical assistant at the site of a newly established airstrip in the centre of the Tari Basin. The first medical patrols were undertaken in 1954 and reported in the inaugural issue of the Papua New Guinea Medical Journal (1).

Dysentery and pneumonia were noted to be the main causes of death at the time, with regular epidemics causing many deaths among all age groups. The prevalence of dysentery will almost certainly have been inflated by the inclusion, under this label, of pigbel (enteritis necroticans), which was not yet recognized as a separate disease. On the whole the Huli people

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appeared to be in a fairly good state of health. Notable was the apparent readiness of the Huli, especially the men, to present themselves for medical examination and treatment, which many would not have experienced or seen before.

No mention is made by Yelland (1) of the heavy toll exacted by clan warfare, but an anthropologist estimated that homicide was the cause of over 13% of all deaths before 1960 (R.M. Glasse, report to the Tari Research Unit, 1979). Clan fighting was suppressed rapidly by the use of firearms by colonial authorities, despite the slender forces at their command. By 1956 there were four Christian missions, each occupying one quadrant of the compass within a four kilometre radius of Tari station. One of the missions, the United Church, established an aid post and by 1959 had built a small leprosy hospital at Hoiebia (Hoyabia) (2). Other missions likewise set up small health centres or subcentres as the area under colonial control expanded. These centres were mainly involved in providing maternal and child health care, including obstetrics, and their services were generally well accepted and effective.

A doctor was stationed at what was to become the district hospital at Tari from about 1960. By the time self-government was granted to Papua New Guinea in 1973 there was effective coverage of most of the population, and infant mortality rates in Tari District had been reduced by at least half. This reduction was due primarily to good access to basic curative and maternal and child health care (3).

In 1978 the process of decentralization of certain government functions from the national government to the newly established provincial governments provided an opportunity to reorganize health services under a newly appointed Provincial Health Board. Health Centre Area Committees were set up in each district to facilitate the provision of health services by the different agencies involved and a successful rationalization of services was achieved, with the closure or amalgamation of some centres and reopening of others in more needy areas.

Decentralization brought about increased coordination and responsibility for local and provincial health affairs but did not lead to any short-term improvement in health or health service performance indicators. One of the main difficulties was the lack of adequately trained management at the provincial level, compounded by lack of support from the National Health Department. A split was introduced in responsibility for primary and secondary health care, with the former transferred entirely as the responsibility of the province whilst hospitals were retained as a national delegated function. Until then the provincial hospital had been an active participant in supporting primary health care (PHC) but the erection of an artificial division between primary and secondary care reduced the potential for mutual support.

In 1987 the era of expansion ended and health services in the Southern Highlands had probably reached their zenith. Until then per capita expenditure on health in PNG had been maintained fairly well, or even expanded, since Independence. Thereafter declining government revenues led to a series of major budget cuts (4). Tari was nominally upgraded from the status of Major Health Centre to District Hospital by the Provincial Government in 1985 but there was no commensurate increase in funding or staffing for the hospital.

Nonetheless, by 1990 Tari District Hospital had been in operation for 20 years, along with a network of health centres and aid posts which had been gradually expanded to cover the population of almost 100,000. There was an excellent support network and referral system which was able in theory to cope with the vast majority of illness presenting in the community. The potential for realizing the goals of primary health care through a district health system centred on a district hospital appeared to be very high.

District health care in Tari

Tari District Hospital

The area covered by the Tari District Hospital is the western end of the Southern Highlands Province, which includes the administrative districts of Tari and Koroba (see Allen and Vail, Figure 1, (5)). There are 3

TABLE 1

HEALTH FACILITIES REFERRING TO TARI DISTRICT HOSPITAL IN 1991

Subdistrict	Health centres	Subcentres	Aid posts
Tari	0	7	23
Koroba	1	4	19
Komo	1	2	15
Kopiago	1	2	14
Total	3	15	71

main health centres which refer patients to Tari, namely Koroba, Kopiago and Komo, and each of these health centres is headed by a health extension officer. In addition there are 15 health subcentres, mainly run by the different church health agencies and headed by a nursing sister, as well as 71 aid posts (Table 1). The hospital also receives referrals from the health centre at Margarima, where there is a large Huli-speaking population, and less often from other centres such as Nipa, Porgera, in Enga Province, and centres in Western Province.

The reference population utilizing Tari District Hospital as their main centre for secondary health care is at least 100,000. The majority of these people reside within a clearly defined geographical and administrative area which has relatively easy access to Tari. In 1991 Tari hospital had 110 beds (although many were in a terminal state of disrepair) with around 75% bed occupancy for most of the year. Over the 3-year period 1989-1991 there were 48,000 outpatient attendances per year and annual admissions averaged 3400, with 680 deliveries per year and a caesarean section rate of 2.6%. Surgical procedures averaged 1140 per year with most forms of major emergency surgery performed at the hospital. The hospital usually had 24-hour power and a constant supply of running water and maintained a blood bank and basic clinical laboratory with a throughput of 8000 tests carried out each year. Other services included radiography, ultrasonography, communicable disease control – tuberculosis, leprosy and sexually transmitted diseases (STDs) including HIV/AIDS (human immunodeficiency virus/acquired immune deficiency syndrome) – nutrition, rehabilitation, dental therapy and physiotherapy. Total staffing at the hospital was about 70, including 16 casual labourers, 13 paramedical and support staff, 36 nurses, 1 health extension officer (as hospital secretary) and 2-3 doctors.

District health in Tari in 1991

Despite poorly maintained roads and limited transport Tari doctors conducted monthly or bi-monthly supervisory visits to most health centres accessible by road or foot, with less frequent visits by air to the more remote centres without road access. There was an active two-way referral system in operation, technical and logistic support was provided where possible and on-site teaching was conducted during visits. Health centre area committee meetings were coordinated to provide liaison with the Local Government Council and the local community. Some community-based health activities were initiated, such as the formation of district STD/HIV/AIDS committees and a bednet program, as well as intersectoral collaboration with the Division of Primary Industry (DPI) on nutrition. Visits were also conducted to remote areas to assess and advise on the health status and needs of disadvantaged groups. However, despite an active District Management Team and the convening of a forum for health workers to establish an agenda for action on rural health, there was little real progress made because of a shortage of funds and a lack of provincial support. It also proved to be very difficult to elicit community support, in part due to the intensely individualistic nature of Huli society and the established tradition of health services being ‘samting bilong gavman’ (a service provided by government).

Patterns of morbidity and mortality in Tari

Population-based demographic monitoring conducted in the Tari Basin by the Tari Research Unit (TRU) – later the Tari Branch of the Papua New Guinea Institute of Medical Research – since 1971 provides an opportunity to contrast the pattern of morbidity and mortality recorded in health institutions and the community, and to evaluate the effects of district health care. Community patterns have been detailed elsewhere (6, 7).

Hospital mortality

Of the 2538 deaths recorded in the TRU surveillance area between 1984 and 1991 21% occurred in Tari hospital, 2% in health subcentres and 73% at home. Over half the children dying at less than 5 years of age died in a health institution, and 80% received some form of medical treatment during their terminal illness compared to 50% of all the terminally ill.

Among the 862 deaths occurring in Tari hospital between 1984 and 1991 (including those people from outside the TRU surveillance area), pneumonia was by far the leading cause of death at 41% (Table 2). Over this period the proportion of deaths in the TRU records of community mortality due to respiratory (43%) and diarrhoeal (9%) disease was similar to that in the hospital, but the proportion of deaths due to trauma/accidents was considerably higher in the community (8%).

75% of people dying in hospital from pneumonia came from within Tari District, but only 30% dying from malaria did so.

Children under 5 years of age accounted for 90% of the deaths in hospital from pneumonia, a much higher proportion than in the community for this age group. Infant deaths from pneumonia fell only slightly between 1984 and 1991, and the proportion of those dying aged under 6 months rose from one-half (51%) to two-thirds (66%). The case fatality rate for infants admitted with pneumonia in 1990-1991 remained high at 8.4%. The high infant mortality from pneumonia occurred

TABLE 2

LEADING CAUSES OF MORTALITY, TARI DISTRICT HOSPITAL, 1984-1991

Cause of death	Number	Percentage
Pneumonia (ALRI)	350	40.6
Neonatal deaths	107	12.4
Diarrhoea/intestinal infections	79	9.2
Meningitis	54	6.3
Malaria	38	4.4
Disorders of heart and pulmonary circulation	27	3.1
Malignant neoplasms	26	3.0
Trauma/accidents	24	2.8
Acute abdominal conditions	22	2.6
Septicaemia	22	2.6
Maternal deaths	16	1.9
Malnutrition	15	1.7
Anaemia	12	1.4
Other or unknown	70	8.0
Total	862	100

despite countrywide efforts to reduce mortality from acute respiratory infections by training staff at all levels of the health service in earlier diagnosis and more appropriate management. A study of aid post orderlies in Tari District (8) suggested that diagnosis and treatment of pneumonia left a good deal to be desired, and a similar situation pertained at the Tari hospital outpatients section. Many of those treated at aid posts and outpatients fail to finish a prescribed five-day course of antibiotics. The frequent observation that even some apparently healthy, well-nourished babies succumb to their first episode of pneumonia at Tari suggests that standard treatment for pneumonia has become less effective in infants. This could be either due to increasing antibiotic resistance or the introduction of more virulent organisms.

There was a mid-year peak in deaths at Tari hospital, principally due to pneumonia, with smaller rises in March and September. This pattern corresponded well with the community mortality data and is probably due to the influx of winter viruses from Australia, rather than any effect of the fairly minimal seasonal variation in Tari.

Mortality in Tari and Papua New Guinea

Health institution mortality data reveal that whilst pneumonia is still the leading cause of death in PNG, it only accounts for 20% of deaths nationwide. Other hospitals in the highlands also have high mortality rates for pneumonia, but none higher than Tari (9). Malaria is less important as a cause of death in Tari than it is nationwide, where it accounts for 9% of deaths. Similarly, tuberculosis and typhoid each account for less than 1% of mortality in Tari, but 5.4% and 3% respectively in PNG overall. Malignant neoplastic disease (predominantly hepatoma) and trauma each account for about 3% of deaths in Tari, which is considerably higher than the national average. This is despite the fact that most deaths from trauma in Tari occur outside hospital.

Tari hospital and health centre morbidity

A computerized hospital admissions and discharges system was developed at Tari in 1991 (10). Analysis of the 10,216 admissions for 1989-1991 revealed that just under 80% of admissions originated from within the Tari District. Obstetrics accounts for the biggest single category of admissions to Tari hospital (23%) although most deliveries are entirely normal. About 40% of admissions are due to infectious disease of which pneumonia or ALRI is the commonest single cause of admission, accounting for 20% of all admissions, the majority being under five years of age.

The leading causes of inpatient morbidity, namely obstetrics, pneumonia, trauma, ill-defined gastrointestinal disorders, diseases of skin and subcutaneous tissues, anaemia and malaria, are much the same as those found elsewhere in PNG, although the proportions differ, pneumonia and trauma being far more frequent in Tari. Trauma is due mostly to clan fighting and domestic violence. Infections caused by staphylococci such as abscesses, pyomyositis and osteomyelitis are also very common in the Tari area and constitute a significant cause of disability. Malnutrition is often present as an underlying factor, since about 20% of children under 5 years of age attending clinics in Tari District are classified as moderately malnourished.

Between 1989 and 1991 the annual outpatient attendances at Tari hospital averaged 48,000, although the daily roll of outpatient attendances was poorly kept. A more detailed record of 2240 attendances collected over a 5-week period in 1992 found that children aged less than 5 years accounted for a quarter of all attendances, and that three times as many males as females presented in this group, a trend continued from the 1980s (11). Disorders of skin and subcutaneous tissue accounted for 28% of illness presenting, followed by respiratory complaints (14%), gastrointestinal disorders (11%), musculoskeletal aches and pains (10%) and pyrexia of unknown origin, mostly attributed to malaria (7%).

A study of the burden of illness in 2567 children under 10 years of age in Tari between 1981 and 1983 revealed that respiratory infections account for most serious illness episodes in children, with 2 to 3 episodes in the

first year of life and the highest case fatality rates in the first 6 months (6). Most illnesses are treated symptomatically at home in the first instance and allowed to resolve spontaneously. Children under 5 years of age are more likely to be taken for treatment, but only on one-third of total symptom days (11). Overall admission rate for the 5276 illness episodes monitored was 6% (11% for children under 1 year of age).

Conclusion

Health improvements in Tari over the past two decades were achieved in the absence of significant social or economic changes and were almost entirely due to the provision of basic medical care, primarily with penicillin and antimalarial drugs. Nevertheless the basic patterns of morbidity and mortality changed very little up until 1991. Infectious diseases, particularly pneumonia and malaria, continued to predominate. Further improvements in infant mortality and other parameters of health status are likely to depend on socioeconomic gains and improvements in nutrition, housing, sanitation and water supply, as well as in education, particularly of females. Implementation of the principles of primary health care, as per the Declaration of Alma-Ata, would greatly facilitate the development process but has proved difficult to achieve in PNG, especially the aspects of community participation and intersectoral collaboration. There is also a lack of commitment from politicians and public servants to the concept of PHC. The key to implementation of PHC appears to lie in strengthening district health management and quality assurance, with increased support and supervision of rural health services, rather than in further expansion of the health service. Such expansion is unlikely anyway because of declining health budgets since 1990.

Both institutional and community-based data show that pneumonia is by far the most important disease in Tari. Research into the reasons for continuing high mortality from respiratory infections is needed, including investigation of pathogens and environmental factors and the role of drugs, vaccines and oxygen therapy. While hospital mortality provides a reasonable indication of causes of death in the community, age patterns are very different due to the reluctance of older people to seek treatment, especially in terminal illness. On the other hand, the Huli show a willingness to take children for treatment, though health systems research is required into mothers' late presentation with infants suffering from pneumonia and into the responses of health workers. The problems of trauma and malnutrition also require a community-based response. Particular areas in which the hospital and health services can improve outcomes are in the provision of selective antimalarial measures, improved supply of drugs and other essentials, seeking greater community participation, better use of standard treatments and increased training and supervision of rural health workers.

In addition to declining budgets, health services have suffered from the effects of widespread alcohol abuse and the breakdown in law and order. Worsening criminal activity and clan fighting have resulted in an increased trauma load, damage or closure of health facilities, the intimidation of health staff and interruptions to maternal and child health clinics. However, the main challenge facing the health services is rapid population growth, which strains available facilities, fuels malnutrition and places increased environmental pressure on the limited supply of arable land. Unless this problem is addressed, health services will not be able to cope with future burdens from diseases such as HIV/AIDS and noncommunicable diseases.

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