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Social and Behavioural Factors Affecting Malaria in Somalia

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Foreword

The UNDP/WORLD BANK/WHO Special Programme for Research and Training in Tropical Diseases (TDR) is a globally coordinated effort to bring the resources of modern science to bear on the control of major tropical diseases. The Programme has two interdependent objectives:

- To develop new methods of preventing, diagnosing and treating selected tropical diseases, methods that would be applicable, acceptable and affordable by developing countries, require minimal skills or supervision and be readily integrated into the health services of these countries;
- To strengthen -- through training in biomedical and social sciences and through support to institutions -- the capability of developing countries to undertake the research required to develop these new disease control technologies.

Research is conducted on a global basis by multidisciplinary Scientific Working Groups on the six diseases selected for attack: malaria, schistosomiasis, filariasis (including onchocerciasis), the trypanosomiasis (both African sleeping sickness and the American form, Chagas' disease), the leishmaniasis and leprosy. Scientific Working Groups are also active in the "trans-disease" areas of biological control of vectors, epidemiology, and social and economic research. The training and institution strengthening activities are limited to the tropical countries where the diseases are endemic.

The *Social and Economic Research Project Reports* series represents a new communication venture undertaken by TDR's Social and Economic Research (SER) Component. This series has been launched to facilitate and increase communication among social scientists and researchers in related disciplines carrying out research on social and economic aspects of tropical diseases and to disseminate social and economic research results to disease control personnel and government officials concerned with improving the effectiveness of tropical disease control.

Research reports published in this series are final reports of projects funded by TDR and usually include more material than ordinarily published in peer review journal articles. TDR considers this material to be valuable both for investigators involved in the study of social and economic aspects of tropical diseases and for professionals involved in training programmes in the social sciences, economics and public health. The series should acquaint those working on similar problems with approaches undertaken by others, in order to test new approaches in different settings, and should provide useful information to personnel in disease control programmes and related agencies.

In the interests of rapid dissemination of social and economic research findings, supporting material, e.g., tabulated data, has not been included in the present report. This material is, however, available upon request to interested researchers. All requests for such material, citing in full the number, title and author(s) of the *SER Project Report*, should be addressed to: Dr C. Vlassoff, Secretary, Steering Committee on Social and Economic Research, TDR, World Health Organization, 1211 Geneva 27, Switzerland.

Tore Godal, Director

Special Programme for Research
and Training in Tropical Diseases
TDR

Preface

This manuscript has been prepared in recognition of the contribution of the research team, Mr. Abyan and Mr. Osman, to social science research in malaria in Somalia. We understand that Mr. Osman and Mr. Abyan were killed during the political unrest in the country in 1991, in their efforts to restore peace and reason to the country they treasured. We have heard nothing of other members of the team.

These researchers represented a unique mix of backgrounds: Mr. Osman was a chemist by training, but had spent his later years working with refugee communities in research and operational relief programmes; Mr. Abyan was a historian and an active champion of human welfare and social change in Somalia throughout the 1980's; and another team member, Mr. Ali, was a journalist. None of them were social scientists in the strict sense, but as a team they successfully conducted, as this report reveals, in-depth interviews and questionnaire surveys, as well as innovative "brain-storming sessions". Their results tell us what little we know about peoples' attitudes, perceptions and behaviour with respect to malaria in Somalia.

It should be noted that this project was meant only as an exploratory Phase I project, and an intervention study was to take place thereafter. Phase II of this project was just about to begin when war broke out and the tragedy followed. At the time of producing this report, Somalia is still suffering from grave political turmoil and the socio-political and economic situation has changed greatly since the time at which the study took place. Hence, this report provides an important record of malaria and related conditions before this upheaval occurred.

There are several shortcomings in the report, due to the fact that it was prepared post-mortem, and is a somewhat reduced version of the original text. The references are not complete, as it was impossible to locate the original material. We have tried to follow the "sense" of the original, without making important textual changes. We have tried to do justice to the authors' original and captivating style.

This Project Report should be useful to researchers, not only in Somalia but in other countries. It provides interesting material on local beliefs and practices, constraints on community participation, and treatment seeking behaviour with respect to malaria. We also hope that this report will be of use in future Somalia, providing a reference point for malaria control programmes when stability and reconstruction are possible.

Carol Vlassoff

Secretary, Steering Committee on Social and Economic Research
Special Programme for Research and Training in Tropical Diseases (TDR)

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CHAPTER I

SOMALIA IN GENERAL

1.1. GEOGRAPHY AND POPULATION

Somalia lies in the northerly tip of East Africa and, covering an area of 638,000 km, makes up a very large part of the area known as the Horn of Africa. Temperatures are high, ranging between 25 °-35 ° celsius, due to Somalia's tropical climate, low relief and low rainfalls. Subsequent to these climatic conditions, 75% of Somalia is poor grassland, with shrub and bush vegetation, and only 13% is suitable for arable farming.

According to the United Nations, the Somali population is approximately 6 million, of which 46% are under the age of 15 (UN, 1987). Population growth is estimated at 3.1%. The population density was estimated to be 9.4 persons per sq.km in 1986, consisting of 29% cultivators, 42% nomadic-herders, and 29% urban dwellers.

As the last figures show, the bulk of the Somali population are nomadic-herders. According to UN studies, about 2/3 of Somalia's population is employed by the livestock industry, making livestock by far the most important economic occupation of the country (UN, 1987). Other economic activities include traditional crop production and irrigated large-scale modern farming along the banks of the country's two permanent rivers, the Shabelle and the Juba.

1.2. EDUCATION

The classical Somali education has been a function shared by the home, community and the mosque. The Quaranic school was the only formalized education accessible to the young prior to the arrival of the colonial epoch.

Modern education introduced by the colonial administrations of Britain and Italy was at its infant stage at the country's attainment of independence in 1960. The new nation state took early measures in the creation of a national education programme, integrating the two systems of education, expanding primary and secondary education, and founding the National University.

The 1970s were an era of break-through developments in education: expansion of enrolment was from 96,930 students in 1973/74 to 219,517 in 1975/76, and literacy rose from less than 5% to almost 50% for all age groups over 15 years.

Nonetheless, the country has failed to sustain these successes, and enrolment has decreased steadily from 1980. Over 200 schools have been closed; less than 12% of the primary school age group is attending schools; and literacy rates show a marked decline. This obvious decline in education is a manifested national decay in development. Reduced education suggests declining standards of productivity, employment, earnings, health, nutrition, collective conscience and community leadership.

1.3. HEALTH

1.3.1. THE PUBLIC SECTOR

Although some improvements in health delivery are apparent following the recent introduction of a modern health service, the Somali population is still accessible to one of the most deficient health services in the world, as can be seen in Table 1.

The paucity in the health service is also manifested by the following statistics:

- i) current health budget: 2% of the national budget
- ii) 60% of the health budget goes on staff salaries
- iii) health budget funds allocated to capital investment: nil
- iv) population per doctor (average): 16,583
(range: 2,352 - 359,050)
- v) population per nurse (average): 3,982
(range: 1,015 - 22,705)
- vi) population per midwife (average): 24,804
(range: 4,616 - 295,170)

The critical overall shortage of health professionals shown by these statistics is not a result of an insufficient supply of trained staff but rather of the system's failure to allocate sufficient funds to the health service in order to retain staff through reasonable salaries.

Traditionally, the Somali modern health service concentrated on cure delivery via a framework of regional and district hospitals. Yet these serve primarily the urban population, neglecting the rural communities that constitute over 70% of the Somali population. This problem is manifested by the highly disproportionate distribution of professionals in various communities. Mogadishu alone, though containing only 15% of the national population, is served by 50% of the entire health personnel, including 75% of the doctors, pharmacists and laboratory technicians.

TABLE 1: COMPARATIVE HEALTH AS INDICATORS

Country	% Access to Health Services	No. of ORS* Packets 100 Under 5's	% Births Attended by Health Worker
Tanzania	70	190	74
Ethiopia	43	66	58
Somalia	25	67	2

* ORS: Oral rehydration salts

Source: The State of World's Children, UNICEF, New York, 1987

An important intervention in the Somali public health care system is the Primary Health Care (PHC) service introduced in 1979. This aims to strengthen and extend health services available to all communities, in addition to improving health information systems and strengthening the health services' management and administration.

The activities of PHC have been tremendously supplemented by the Refugee Health Unit (RHU), which is the principal health delivery service to Somalia's large refugee population. The RHU, due to generous donations from international sources, has been enriching and expanding the PHC services, especially in the refugee-hosting regions. The PHC's activities and effectiveness will shrink following the closure of refugee camps in Somalia in the very near future.

The health service is further undermined by a host of constraints which include weak administrative structures, the inadequacy of its delivery manpower and, above all, cultural scepticism towards western medicine.

1.3.2. PRIVATE SECTOR HEALTH PRACTICES

The growing number of pharmacies in Somalia and the legal establishment of private medical clinics in 1985 have resulted in an improvement in the quality and scope of the health service. Yet here again, like all other public services, their distribution is unequal from urban to rural and from Mogadishu to the rest of the country.

The most critical issue for the Ministry of Health is extending health services to the rural majority of the population, at present served mainly by PHC activities. However, public health delivery is undermined by the rural population's lack of education, and hence their inability to appreciate modern health services and to abandon many of the cultural taboos towards the causes and cure of disease.

a) Traditional Medicine

Somalia is a traditional society, with the folkways of thought and practice still intact. Hence traditional medicine is largely in vogue. Somali traditional medicine practices are rooted mainly in three cultures: the Eastern Cushitic folkways, the Islamic faith and practices, and the influence of the Bantu population found in the southern part of the country and along the riverbanks.

It is from the intermingling of Islamic traditions and pre-Islamic medical heritage, such as the Greek Galenic and prophetic systems of medicine, that the well-grounded and functioning traditional medicine is composed. This is parallel to the modern health service, and has several types of principal healing systems. These include cauterization, scarification, traditional bonesetting and surgery, exorcism and magical rites, herbalism, and the consultation of religion (the Quran).

b) Traditional Healers

Like the modern sector of the Somali health system, traditional healing is delivered by specialized task forces. The traditional healer is narrowly trained to manage one of the above healing systems. The best known healers of this traditional health service include "sancoole" (practitioners), astrologists, exorcists, religious healers and herbalists.

To sum up, traditional medicine is a comparable and parallel health delivery system to that of modern medicine. Through both primitive medicine, magico-religious or supernaturalistic practices, and empirically learned therapies from the deep-rooted socio-cultural heritage of its distant past, rural Somalia is largely served by the healers of tradition. As primitive concepts and beliefs have not given way to modern thought and practices, people's perceptions, attitudes and behaviour in relation to modern medicine and delivery systems have been making limited impact.

1.4. MALARIA

In the 3-Year National Health Plan (NHP) 1989-1991, a number of communicable diseases are identified as deserving priority attention. Malaria was indicated on the list of the ten major killer diseases in the National Morbidity Survey (WHO, 1980-1981). With a prevalence rate per 1,000, its score is 19 and ranks the eighth killer (NHP, 1989-1991).

In other words, despite the long history of malaria control initiatives in Somalia, the scourge of malaria has continued to undermine the health and well-being of the Somali population. It is associated with high infant mortality rates and has a negative impact on the socio-economic productivity and development of the country. There is a strong hypothesis that chloroquine resistance has been growing in many parts of the country, further exacerbating the problem, despite sustained malaria control efforts and the widespread distribution of chloroquine tablets.

The First 5-Year National Health Plan (1980-1985) made its target the reduction of morbidity, then estimated at 14 per 1,000 Annual Parasite Index (API), to an API of 8 per 1,000 by 1985. To achieve this, the plan prioritized strategies of mass chemotherapy, residual spraying with insecticides, and expansion of the biological control of anopheles larvae with the utilization of known indigenous larvivorous fish, namely *Oreochromis* and other such fish species as *Notobranchius* and *Aphamius Dispar*.

Although similar strategies as those cited above were also outlined in the Second 5-Year National Plan (1987-1991), the outcome of both plans was disappointing, with no decrease of malaria incidence being recorded. Reports from established laboratories have indicated remarkable increases in the malaria positivity rates (p.r.) in the last few years, as can be seen from Table 2. The blood slides examined from fever cases suggested an endemicity increase from 1986 to 1987 of 77.2%, while the increase in the p.r. in 1987 against the p.r. of 1986 in blood surveys was 77.1%. Indeed, today's morbidity rate seems to be higher than that of 1980, as the present estimate figure is thought to be an API of 15 per 1,000. A clear comprehension of the physical, social, economic and cultural dimensions of disease transmission must therefore be fundamental to effective control measures.

The fact that malaria transmission is caused by the mosquito vector was known to the Somalis long before Dr. Ross claimed its discovery in 1897. Hence the Somalis had their own practices for treatment, in use over several decades, such as the consumption of the mild drug-related "Kat" leaves, fresh camel milk, purgative herbs and black river fish. Fumigation is also among the traditional practices to prevent malaria morbidity.

The degree of endemicity of the disease varies according to zones, ranging from a meso-endemicity in the inter-riverine area to hypo-endemicity in the rest of the country. The proliferation of the disease shows a strong seasonal variation, reaching peak levels during heavy rainy seasons.

Several species of anopheles are found in the country, but only two of them have been identified as malaria vectors. They are *A.Gambiae* group B (*Arabiensis*) and *A.Funestus*, both of which are found in our Afgoi case study area.

TABLE 2: MALARIA POSITIVITY RATES 1985-1987

Year	Fever Cases (p.r. as % of total cases)	Blood Samples (p.r. as % of total cases)
1985	8.0	4.6
1986	10.1	7.0
1987	17.9	12.4

Source: Ministry of Health (MOH), 1988

1.5. MALARIA ENDEMICITY

The reasons for the perpetuation of the disease and the ineffectiveness of the control or eradication measures have been the subject of controversy for some time now. Various explanations have been suggested which include:

- i) Water development remains Somalia's number one priority. Therefore, the ever-increasing development of water reservoirs/points and irrigation projects has exacerbated the development of mosquito breeding grounds and hence upward malaria transmission.
- ii) Large amounts of remittance money during the boom years in the Gulf States have been invested by the private sector in the construction of sub-ground cement reservoirs and in harnessing ground water for irrigation of land that was formerly uncultivated or used for dry farming only. This has also led to the availability of more fresh water to breed mosquitos.
- iii) The first *P.Falciparum* of locally acquired infection resistant to chloroquine was detected in mid-1986. In 1987, a total of 94 "in vivo" tests were performed on patients with *P.Falciparum*, out of which 36 were found resistant to chloroquine. This new phenomenon is an added aggravant suspected to contribute to increased malaria transmission.

An important contributing factor to the failure of the control measures mentioned are socio-economic and culturally-linked attitudes and perceptions which are largely responsible for the continued persistence of the disease. These factors range from lack of awareness of existing facilities and absence of adherence to the advice and prescriptions of the medical staff to strong traditional beliefs and attitudes which are loath to the use of western drugs and pesticides. In addition, attitudes towards medical prescription and the behaviour of control programme personnel may be important contributing factors to community resistance.

It is against this background that GARGAARA proposed a study to investigate the socio-economic factors which influence human behaviour associated with the apparent perpetuation of malaria in Somalia.

CHAPTER II

STUDY OBJECTIVES AND RESEARCH DESIGN

2.1. OBJECTIVES

This study aims to examine malaria as a problem for the communities of Afgoi, Lama-Doonka and Beled-Amin from the socio-cultural perspectives of the people, placing emphasis on their beliefs and practices in relation to malaria. Thus the investigation touches upon, in general terms, the socio-economic and cultural factors influencing malaria transmission among these communities, the communities themselves being typical of sub-cultural groups.

The specific objectives of the study are as follows:

- a) to investigate the socio-economic and cultural factors relating to the perpetuation of malaria transmission among the communities in three settlements (one urban and two rural) in the Lower Sabelle valley of Somalia. It was found necessary in particular:
 - i) to investigate the attitudinal perceptions and cultural biases of the target population towards modern malaria control measures;
 - ii) to explore the associated behaviours and lifestyles of these communities which negate the success of measures against malaria transmission;
 - iii) to describe the economic activities and social structures of the target populations;
 - iv) to investigate the acceptability of chloroquine tablets in relation to alternative traditional methods of treatment.
- b) to study the key entry points and to determine mechanisms for obtaining community participation in a possible Phase II of the study.
- c) To investigate the control measures previously undertaken.
- d) To provide an information base for an intervention study to assess the impact on a variety of malaria control interventions.
- e) To communicate the findings of the study to the appropriate government

bodies and other relevant institutions.

- f) To strengthen the research capabilities of GARGAARA and to give training opportunities to SOMAC (Somali Academy for Science and Arts research staff.

2.2 WORKING HYPOTHESES

- 1) The study populations have well-entrenched traditions for the prevention, detection and cure for malaria. These traditions may not be effective in dealing with malaria as a problem in any of these three domains, but they seem to be more in popular use than modern medicine.
- 2) These communities hardly comply with medical regimens.
- 3) Certain members of these communities are receptive to modern approaches to malaria control, but owing to low incomes, they resort to traditional medicines and healers that are less expensive.
- 4) Pregnant women in particular are the most disadvantaged in this respect, as there is a strongly-held belief that pregnant women should not take chloroquine tablets because they are thought to harm the foetus.

2.3. RESEARCH DESIGN AND METHODOLOGY

The research design was, in the context of data gathering, two-pronged:

- i) A formal questionnaire focusing mainly on local opinion-makers in the study area, such as community leaders, traditional healers, practitioners and religious sheikhs, as well as representatives of the ruling party, government, social organizations and business leaders.
- ii) Unstructured interviews and "brain-storming sessions" with community members through continual contact in meeting places such as markets, tea shops and community centres.

Specific issues investigated in these sessions included sanitary standards, exposure to vectors, natural prevention of malaria, conceptions and misconceptions about malaria transmission, and the use of chloroquine both as a prophylactic and therapeutic agent. Participant-observation techniques of eliciting information from the population were central to the research design and methodology. This technique, although unstructured,

presupposed the preparation of a questionnaire schedule that was used as an interview guide.

In Afgoi, the interviewers, employing the cluster sampling technique, reached 219 households, constituting about 6% of the 3,500 dwelling compounds in the township. In the case of Lama-Doonka and Beled-Amin, a systematic random sampling technique with a random start was employed. A 48% sample of the households in Lama-Doonka and 21% in Beled-Amin were studied. High percentage samples were taken in Lama-Doonka and Beled-Amin because of the low population densities whereas in Afgoi, a 5-6% sample of the total population was considered representative of this fairly large settlement.

The interview component was supplemented with "brain-storming sessions" in Afgoi and Lama-Doonka, in which researchers and leading members of the respective settlements discussed the popular beliefs and practices that were considered effective in the detection, prevention and treatment of malaria.

The research team consisted of 5 research assistants in the 3 study sites and 10 local facilitators. The latter, consisting of 5 community figureheads and 5 health workers, had the dual function of helping the research assistants to settle and live with the people as smoothly as possible, and of acting as resource persons in their respective locale.

2.4. MODIFICATIONS AND LIMITATIONS

As invariably occurs in real field conditions, the original research methodology underwent slight adjustments, but these were not drastic enough to divert the study from its main objectives. These minor modifications of the methodology and the limitations that led to them were as follows:

- 1) Due to unusually heavy rains during October and November 1989 (field research period), Beled-Amin became inaccessible. Hence it was decided not to hold a brain-storming session in that village.
- 2) As the rains were late and heavy, the growing season coincided with the field work. As the study communities were largely engaged in agricultural work, many were difficult to locate for most of the day, and were often too tired in the evening to participate effectively in discussions on malaria prevention and treatment when all they wanted was to eat their evening meal and rest. However, these evening sessions gave the research assistants an opportunity to observe the methods and materials used in driving mosquitos out of the living compounds.
- 3) Language dialects were also a minor problem. The questionnaire schedule was originally drafted in English and then translated into classical Somali with which the research assistants were most familiar. However, some

sections of the inter-riverine peasant farming communities found this classical dialect incomprehensible. The research assistants therefore expanded the questionnaire schedule with open-ended questions in order to make themselves understood while conducting interviews. In addition, the local facilitators, who were invariably conversant in the local dialect, were of much help in conducting a two-way communication system in such situations.

- 4) Because of the proximity of the study area to Mogadishu the research team soon discovered that the study communities had been relatively "over-researched". The resentment felt by some respondents at this invasion of privacy created certain negative attitudes that could have affected the research results. Therefore, such hostile respondents were carefully screened and excluded from the study.

CHAPTER III

THE STUDY AREA

3.1. GENERAL BACKGROUND

3.1.1. GEOGRAPHY

Our study area is Afgoi district which is part of the lower course of the Shabelle River, one of the only perennial rivers of arid Somalia. The land in this area is very low-lying - hardly over 1,000 feet above sea level and flat.

As for the climate, our study area is included in the geographical zone of the country that receives the highest annual rainfall (over 600 mm), although this precipitation is erratic. The temperature, unlike the rainfall, remains high and constant all the year round. Around the Lower Shabelle, it shows no variations and monthly averages range from 27 °-30 ° celsius throughout the year. Humidity of the area is rather high and uniform, averaging around 80% for most of the year.

3.1.2. ECONOMIC PRODUCTION

The traditional economy of Afgoi district is crop production coupled with livestock raising by most communities. Typical communities of Lama-Doonka depend on crop production, mainly for subsistence. In the case of Beled-Amin, the poor young population already finds it hard to get enough farmland to secure basic food and the necessary surplus "for a rainy day" as well as to generate cash for other household needs. One major constraint to agriculture in this area is labour. The amount of land a household can cultivate is determined by the amount of labour it can afford for dryland farming. If the poor peasants do not own enough land of their own, they often do side jobs such as stock-raising or working for big plantation owners.

The reason we are dwelling on cash earnings of the poor farmer is to highlight the unlikely prospects for these farmers to be able to pay for their basic health needs, including prevention or treatment of diseases like malaria, unless their productivity is enhanced. This is only possible through the application of modern technology for farming e.g. seed selection, mechanization and irrigation.

3.2. AFGOI

Afgoi is a district headquarters on the River Shabelle about 30 km west of Mogadishu, the national capital, and has a population of over 33,000 persons (Afgoi Municipality

Records, 1988). Besides being the administrative district centre, Afgoi is also the hub of the socio-economic and cultural life of the area.

Three sub-cultural sections make up the township. 21 October section is predominantly a traditional peasant community; Dhagahtur is the business centre; while Hawo Tako is the relatively modern sector of the town.

While Hawo Tako and Dhagahtur have good educational facilities and school attendance rates, the primary school in 21 October sector is poorly attended due to the community's inability to afford uniforms and writing materials, and also to the teachers' poor attendance rates consequent upon the meagre government salaries they receive.

Water facilities vary between the sectors of Afgoi district. There are a number of wells with diesel pumps in 21 October section, but many households cannot afford to pay the minimal charge of So.Shs.5 (0.5 U.S.cents) for a bucket of safe water and hence use river water instead. Many households in Hawo Tako have piped water and the rest get their water from boreholes provided with diesel pumps. Hence, this whole community relative to the older sections gets less contaminated water. However, the sector is highly infested with mosquitos, due to the breeding sites of the river, irrigation canal and community wells, as well as to the lack of sanitation services.

Indeed, the sanitation conditions of Afgoi township could be the source of many health hazards. The streets are not often cleaned and, due to the lack of regular waste removal services, are used as disposal sites. As many streets are unpaved, there are numerous open potholes where waste is often dropped. The same pits may form water ponds during the rainy seasons; these are popular swimming pools for children, and also attract domestic animals like cows and goats that drink and pass waste in them. This neglected environmental situation is responsible for many community diseases, which include gastro-intestinal diseases, schistosomiasis and malaria.

As regards health facilities, Afgoi boasts a district hospital, located in Dhagahtur sector. However, the hospital is not very popular; people interviewed explained that the hospital has nothing much to offer, especially in the form of medicaments. There is also a medical laboratory, equipped for checking blood, urine and stool samples. The majority of the patients who report for malaria check-ups are children, aged 1-4. This seems to be because the adults feel confident that they know malaria symptoms and thus need not consult any laboratory or doctor.

3.3. LAMA-DOONKA

Lama-Doonka is situated 12 km west of Afgoi, on the paved road joining the capital, Mogadishu, to the southwestern regions of the country. It is one of the sub-districts of Afgoi district with a total number of 214 households. Membership of 90 households surveyed was 497 persons, with an average of 5.5 persons. Lama-Doonka has eight

Quranic schools, which are enough to cater for all the boys of the village. However, its primary school is almost empty, as the teachers hardly turn up. In November 1989, the school was closed as most of the teachers did not return from the summer vacation due to the fact that they could not manage to survive on their official earnings.

Lama-Doonka is the main water point of the area. It has a well provided with a pump to fill an overhead water cement tank which serves both humans and livestock, the latter being provided with water troughs to drink from. This well is supplemented with four seasonal man-made ponds designed to be filled with rainwater. Yet due to improper maintenance, these seasonal water points are very much misused. Drinking water drawn from these reservoirs is neither boiled nor treated, as the average person does not understand that the drinking water of the village is the cause of many of the diseases of the village. Furthermore, these water points are used as swimming pools and laundries, and the herds are also allowed to wallow, defecate and urinate in them. Health officials in the district see them as the breeding grounds of many water-borne diseases like malaria and schistosomiasis.

Another aspect of poor sanitation in the village is the fact that village animals are kept in most of the living compounds of the people. These animals, which may be hosts of several diseases, freely wander in the streets, leaving their droppings everywhere and consuming garbage such as food remains which are often dumped just outside the compounds. All these factors generate an adverse sanitation situation which negatively affects community health.

The only modern health service in Lama-Doonka is a PHC with one health worker and four traditional birth attendants (TBAs). However, it is hardly used due to lack of drugs. The most active health service in this community is that of traditional medicine. There are at least five traditional healers who deal with diseases, including malaria, and other problems such as epilepsy, rheumatism and fractures. Although the community is fortunate to be at easy access to the health facilities of Afgoi and Mogadishu, very few seek health attention outside their neighbourhood. Reasons for this include:

- a) that perhaps they are not convinced that Western medicine is superior to traditional medicine, especially that of religious healers;
- b) that most of the people are unable to afford it, especially hospitalization in Afgoi or Mogadishu.

3.4. BELED-AMIN

Beled-Amin, which lies 23 km south of Afgoi, is on the eastern bank of the Shabelle river. There are 480 households in the village. The number of persons in 102 households visited were 568, giving 5.7 persons on average per household. As the core

community of Beled-Amin is a body of Islamic brotherhood, over 90% of the young males attend Quranic schools, according to the village head. There is also a three-class primary school with two teachers. However, this is not functioning now, as the teachers were unable to stay due to their low salary. The people themselves are not enthusiastic about schooling their children, mainly because the children are needed by the households as part of their indispensable labour force. Following the national literacy campaign (1974-1975), most of the adult population has attained the minimum skills of reading and writing the Somali language. However, as they have little access to reading materials, the literacy of the average person is below functional standards.

People drink mainly from the river, exposing them to water-borne diseases. Although there is a recently-drilled hand-pump well, many of the people continue to drink river water because they do not realize that it is a health hazard. Also, the river water is free, while one has to pay shillings 5/- for each 20-litre can of water from the well.

Sanitation of Beled-Amin is no less of a threat to people's health than that of Lama-Doonka. The keeping of animals in the living compounds, the indiscriminate garbage disposals in front of homes, and the lack of any environmental sanitation service are reasons why people's morbidity is rather high. There are no public services for disease control. Public health instruments like the Mosquito Control Unit, MCH and PHC systems have hardly reached this community. There is a PHC post with two community health workers, but it is dust-covered and has not been in use for at least a year. One of the health workers showed considerable concern about the fact that he failed to secure drugs and basic materials to render any service.

All Somali communities have a low sense of community service if it is not clan-based. A syndrome of dependency on the government for all common services like health and education has been injected into the culture in the colonial era when the first public health service, education, roads and security were introduced. This social psyche has an inhibitive impact on the people of Beled-Amin in making communal efforts to deal with their own problems. As their participation in health procurement is pre-conditional, appropriate interventions to change the dependency value structure is the decisive key to the problem-solving capacity of the people.

As indicated in the last 3-Year National Health Plan, most of the programmes to control diseases such as malaria call for community participation. For villages like Beled-Amin, the people could do a lot by themselves, having the basic resources of skills and materials. For instance, in the area of environmental sanitation, the problems to be tackled include lack of safe drinking water, unsatisfactory excreta disposal and poor food and hygiene. All these problems could be managed by the communities of Beled-Amin, provided they possess the will to address them. The critical question with respect to environmental sanitation is what can be done to educate the population to change their present beliefs and attitudes towards both community health and collective participation as leaders and fellow citizens of the same community.

CHAPTER IV

SURVEY RESULTS

4.1. BRAIN-STORMING SESSIONS

In the two brain-storming sessions conducted in Afgoi town and Lama-Doonka, a wide cross-section of the social groups were mobilized to discuss issues associated with local knowledge about malaria, and prevalent practices regarding its prevention, detection and treatment. Nearly 60 opinion-makers (27 in Afgoi and 30 in Lama-Doonka) gathered together separately to answer questions fielded by the research team, with the Principal Researcher as a chairperson.

Questions included what the participants did if they felt they had the disease; the socio-cultural and economic factors that inhibited or promoted malaria control; knowledge about previous or on-going disease control programmes and their perceptions about the staff of such programmes; women's roles and their influence on health-seeking behaviour; dietary habits that aggravated or enhanced malaria transmission; and the participatory approach necessary to fight malaria transmission.

The key questions asked regarding prevention, detection and treatment, as well as the socio-cultural attitudes towards malaria, are given below:

1) PREVENTION

What are the preventive measures against malaria common among members of this community?

In both the Afgoi and the Lama-Doonka sessions, general consensus was reached on the normal methods used to repel mosquitos from the home. These included chemical spraying; fumigating houses with traditional plants like "Qori Qudde" and maize ear; beating the house walls and recesses with a towel to drive away the mosquitos (a process known as "Shabis"); and drinking the broth of local black river fish. However, it was pointed out in Afgoi that availability of this fish had been greatly curtailed by the recent construction of a dam 30 km upstream.

It was noted in both communities that preventive measures taken by households usually corresponded to their economic status. For example, the well-off used chemical spraying, mosquito coils and nets; middle-income groups used "Qori Qudde"; while people with low incomes utilized the remains of their harvest such as maize ear.

2) DETECTION/DIAGNOSIS

How would you know if a patient is sick with malaria, and how would you differentiate malaria from similar diseases?

The majority of participants in both sessions confirmed the following symptoms as being evidence of the presence of malaria: loss of appetite and a bitter taste in the mouth; nausea; pains in the joints and in the back; a high fever; and shivers. In Afgoi, the traditional healer said that testing the patient for anaemia was an effective diagnostic method, a point agreed upon by those present. Hence the communities in general seemed to be well conversant with the symptoms of malaria. This may explain why taking blood samples to ascertain the disease was admitted by only 3 people (15%) in Afgoi, and then only on very few occasions.

However, few people in either session knew of other similar diseases. Typhoid was cited both by Afgoi's pharmacist and by Lama-Doonka's traditional healer and health worker as resembling malaria in that both diseases resulted in fever and shivers. Yet they pointed out that it was a fairly new disorder to the country (1970s) and hence people were generally not familiar with it.

3) TREATMENT

When a person suffers of malaria, what do you normally do in your community to treat the patient? What is the first step you take to treat malaria?

On the subject of treatment of malaria, the overwhelming majority of the participants advocated reciting verses from the Quran, drinking local purgatives such as the juice of "Carmo" leaves, and massaging with a mixture of sesame oil and lemon juice, as the first line of defence. According to the Lama-Doonka participants, there are no traditional healers who specialize in malaria treatment, as people have known its treatment for generations.

Irregular and unprescribed doses of chloroquine came as a second choice, while visiting a doctor or going to the hospital came as the last resort. On being asked why they do not go to hospital in the first place, 17 participants (about 60%) in Lama-Doonka attested that there was no doctor or medicaments in their village, going to Afgoi was expensive, and seeing a doctor was time-consuming. The rest (about 40%) said they saw no reason to waste time and money if they could cure themselves and their relatives with simple and cheap traditional methods. Hence economic considerations obviously play a role in both the prevention and treatment of malaria.

An important issue in the treatment of malaria is the use of chloroquine by pregnant women. Afgoi's Somali Women's Organization (SWO) member pointed out that women were disadvantaged in the treatment of malaria due to a general belief that chloroquine

tablets if given to pregnant women will induce abortion. Indeed in Lama-Doonka, when Mrs. Muslimo, the woman leader, admitted to taking a weekly dose of chloroquine as a preventive measure even when pregnant, many eyebrows were raised. All other participants in Lama-Doonka were against chloroquine for malaria-affected pregnant women. Similarly in Afgoi, very few participants advocated chloroquine at all for pregnant women. Even the nurse participant admitted that she had reservations about the drug and never took it when once she had the disease while pregnant. However, Afgoi's district medical officer emphasized that the after-effects of chloroquine, if any, were less lethal than the disease itself, and insisted that pregnant women would not be adversely affected by taking the drug. In fact, he said, the high fever often suffered by malaria patients was more causative in effecting abortion.

4) KNOWLEDGE ABOUT MALARIA

How is malaria transmitted?

While it was generally acknowledged that malaria was transmitted by mosquitos, there was disagreement in both communities over the exact nature of this transmission. While Afgoi's pharmacist and Vice-Mayor both argued that the Anopheles mosquito carried the malaria germs from the start, the school inspector contended that the mosquito gestates the germs after having bitten a malaria patient, and then goes on to transmit these germs to another person by biting them. The latter view was also put forward by 9 participants (more than 25%) in Lama-Doonka.

A counter-opinion was proposed there by the village elder, who argued that mosquito bites would not lead to malaria in the rainy seasons, but might flare up in the pre-harvest season due to stomach upsets caused by eating unripe maize beans. Although full support was given by all participants to the idea that this pre-harvest season marks the peak of malaria virulence, this rationale for malaria causation was contested by the majority.

It is interesting to note here that although practically all the participants in Lama-Doonka agreed that malaria is not contagious, 5 of them supported the opinion that malaria can be transmitted from a patient to a healthy person by sitting or sleeping with the patient in the same room, through the patient's high body temperature - an osmotic effect, as it were. Similarly, 4 of Afgoi's participants believed that the heat emanating from the high temperature of malaria patients would be enough to transmit the disease.

The overwhelming majority of the participants in Afgoi agreed that malaria was not hereditary.

Where does the mosquito breed best?

Overall, the communities were well aware of mosquito breeding grounds, citing stagnant waters, ponds, river banks, and water pots and latrines in houses as prime breeding spots. It was noted in Lama-Doonka that the mosquito larvae ("muli-muli") could be observed coming up for air in such stagnant water.

Some people believe that malaria is not a killer but only a debilitating disease. What do you think?

The general consensus on this question, posed at the Afoi session, was that without treatment, malaria could be a killer disease due to the liver disease that it could provoke.

5) DIET

Are there special foods not given to malaria patients, or any special diet recommended for them?

The participants in both sessions all agreed on certain foods that are given to malaria patients and other food items not recommended for people suffering from malaria. Those food items recommended, for either their curative or laxative properties, were camel milk, sorghum porridge, goat meat and broth, and black river fish. In contrast, cow's milk, fatty meat, pre-ripened maize, fruits such as banana and mango, and bread fried in "ghee" or oil were not recommended as they caused stomach upsets or contained fat, which was not good for malaria.

Afoi's school inspector pointed out that, having come to Afoi from afar, he and his family became constantly sick with malaria. However, once he followed advice to change his eating habits and conform to those of the community, he and his family became far less prone to malaria fever.

6) CONTROL MEASURES

The Ministry of Health claims that there are anti-malaria control measures in place. What does the community know/feel about these control measures?

In Afoi, the SWO chairwoman stated that there was a well-equipped anti-malaria clinic where blood samples were taken, free prescriptions made out, and chloroquine tablets provided when available. The medical officer further claimed that as part of the anti-malaria control campaign, tours and a general inspection of the community were made and drugs distributed accordingly. However, most of the participants refuted this official line and pointed out that 1987 was the last time any chloroquine or drugs for schistosomiasis were distributed. Even then, they argued, the amount of medicaments

available were hardly ever adequate to satisfy the high demand. This suggests that this urban community is not loath to Western medicine, but the high price and the unavailability of medication are significant factors leading people to prefer cheaper and more readily available traditional methods.

According to the participants in Lama-Doonka's session, no anti-malaria control programme has ever been undertaken in the community or in its neighbouring sister settlements.

7) COMMUNITY PARTICIPATION/INVOLVEMENT

How would the community be mobilized to participate in malaria control programmes?

In both Afgoi and Lama-Doonka, popular suggestions for community involvement in malaria control programmes included co-operation in cleaning and draining stagnant waters and puddles conducive to mosquito breeding, and meetings to raise the people's awareness of the dangers of malaria and of the best methods of prevention and treatment. However, when questioned on their willingness to contribute financially to such programmes, the participants in Lama-Doonka emphasized that the majority of its people were poor peasant farmers who would not be able to provide such cash support.

Discussions with participants in both sessions indicated that people would remain sceptical until they encountered concrete control efforts. Given these, the participants had no doubt that mobilizing the people for the betterment of their own lives would not be difficult. As Afgoi's Vice-Mayor put it:

"Everybody is fed up with recurrent malaria and will thank God for any agency ready to help them defeat this curse".

4.2. QUESTIONNAIRE RESPONSES

Responses of the questionnaire method were sought for two main reasons:

- i) to determine the socio-economic and demographic profiles of the various communities;
- ii) to check the validity of the findings of the participant-observation and brain-storming sessions.

Representative samples were taken from the households and opinion-makers of each community in order to investigate the communities' perceptions, attitudes and ability to deal with malaria disease. Some of the salient responses are recorded below:

1) FREQUENCY OF MALARIA INCIDENCE AMONG RESPONDENTS

As can be seen from Table 3, 76% of the household heads (HHHs) in Afgoi admitted having had malaria at least once, while 23% said they had never had the disease, and 3 persons (1%) were not sure. Beled-Amin showed the highest incidence, with 99% having suffered from malaria more than once. Lama-Doonka seemed to be the least affected, where 34% claimed not to have had the disease. Yet even in these relatively dry surroundings, 30% of the respondents had malaria more than twice, again showing the high endemicity of malaria among the target population.

Possible reasons for the alarming prevalence indicated in Beled- Amin could be its location along the river bank; its relative inaccessibility to modern ideas or control activities; and its relative distance from the nearest public health services and pharmacies (23 km from Afgoi).

In the case of Afgoi, the highest malaria incidence was recorded for 21 October section. This could be attributed to, among other factors, lower socio-economic standards and

TABLE 3: MALARIA ATTACKS AMONG HOUSEHOLD HEADS (HHHs)

Community	HHHs Surveyed	Number of Malaria Attacks in Lifetime									
		Once		Twice or more		Thrice or more		Never		No Reply	
		%	N	%	N	%	N	%	N	%	N
21 Ocober	75	11	8	4	3	77	58	5	4	3	2
Hawa Tako	65	17	11	9	6	42	27	31	20	1	1
Dhagahtur	81	15	12	22	18	30	24	33	27	0	0
Afgoi Total	221	14	31	12	27	49	109	23	51	2	3
Lama-Doonka	103	16	16	14	15	36	37	34	35	0	0
Beled-Amin	102	1	1	0	0	99	101	0	0	0	0

literacy rates. On the other hand, although Hawo Tako residents enjoy higher literacy and better social amenities, their malaria incidence is higher than that for Dhagahtur, the business sector. This could be explained by the combination of several factors, such as the fact that most residents of Hawo Tako are not indigenous to the area and may therefore not have developed immunity to malaria. Furthermore, a canal passes through the sector, and irrigated crop farms encircle it, both providing additional breeding grounds for mosquitos.

2) MORTALITY RATE

In response to the number of household members who have died of malaria, Table 4 indicates notably low figures according to the 426 respondents interviewed. The number of deaths recorded for Beled-Amin are the highest, while the only person said to have died in Afgoi lived in 21 October.

These figures are surprisingly low in an area of high malaria incidence, and it is possible that they are affected by human error due to memory relapses over a long period. Another important factor is that autopsy is generally unknown in Somalia, where Islamic traditions denigrate pathological tests after the death of a beloved one.

3) KNOWLEDGE ABOUT MALARIA

What seasons do people get malaria in your community?

Out of the total respondents of 426 persons, 72% correctly confirmed the correlation between rainy seasons and malaria. It is interesting that 18 persons - 15 from Beled-Amin and another 3 from the Hawo Tako sector of Afgoi - stated that malaria incidence spreads through all seasons. This is understandable as both communities are more exposed to the risks of malaria, Beled-Amin due to the river and its sheltered surroundings, and Hawo Tako due to its intensified use of the irrigation system during the dry seasons. Overall, then, the seasonality of malaria and its relationship with rainfall and water seem to be common knowledge in all these communities.

How do you identify a malaria patient?

Over 93% of all respondents underlined high fevers, intermittent shivers, pains in the joints and a bitter taste in the mouth as the main symptoms of malaria, 52% of them also adding hallucination for intense malaria cases. This is strong testimony that these communities are knowledgeable about the same malaria symptoms that the doctor uses for a preliminary malaria diagnosis.

TABLE 4: RESPONSES TO MORTALITY CAUSED BY MALARIA

Community	HHs Surveyed	No. of Deaths	None	Don't Know
Afgoi	221	1	215	5
Lama-Doonka	103	3	100	-
Beled-Amin	102	18	84	-

Do you go to a clinic to take a blood sample?

Thirty-two percent of the respondents said that clinics were inaccessible to them. Another 68% said that blood testing was unnecessary as they were confident in their traditional detection techniques. The respondents' general disdain about the blood slides showed that their knowledge on detection was incomplete. They would have considered inaccurate any belief that those symptoms were not for malaria alone, while blood slides were free from similar pitfalls.

What preventive measures do you use to counter malaria?

The preventive methods used by the respondents lent support to the finding that people did not view malaria as a serious enough health hazard to take serious measures for its control. They tended to be more concerned about the bothersome bites of the insect, especially in bed, rather than its disease causing potential, as shown by the fact that all of their preventive methods were designed to avoid mosquito bites during sleep.

Also, the preventive measures used by these communities showed obvious correlation to household incomes. Out of the 205 respondents in Lama-Doonka and Beled-Amin, 95% used fumigation in their homes with local shrubs and maize stalk ears. In 21 October section, 71 out of 75 responding households reported using this regularly. On the other hand, out of 146 respondents in the more affluent parts of Afgoi, 56% reported using mosquito coils, insecticides or wiping the cement floor with naphthalene. Another 8% in Hawo Tako and Dhagahtur said that they used bed-nets.

Only 3 people mentioned taking a weekly chloroquine dose as a prophylactic, although

most community members in the three settlements recognized chloroquine as a good enough curative method. Although modern methods of house-spraying with insecticides, bed-nets and chloroquine-taking are known to the average adult of these communities, their use as malaria control methods largely depended on the level of their concern about the disease and ability to pay for disease control products.

4) MODERN TREATMENT AND TRADITIONAL PRACTICES

In the area of malaria treatment, the folkways are still more prevalent than modern approaches, as shown by Table 5. Out of 426 respondents, 47% used modern forms of treatment, while the remaining 53% resorted to all kinds of traditional medicine. The most popular ones were local purgatives such as "Carmo" (wild vine), "raqay" (tamarind) or catfish, the latter being more trusted as having immediate curative impact. In addition to herbs, other fetish methods such as faith healing are popular. Even the high usage of modern treatment, mainly by the urban population of Afgoi, is deceptive; it is generally a matter of buying chloroquine over the pharmacy counter without medical advice but after self-diagnosis.

Another relevant indication of Table 5 is the correlation between rural culture and popular use of traditional health methods. Sixty-four percent of the Beled-Amin population resort to traditional treatment, as opposed to 59% in Lama-Doonka and 45% in Afgoi.

When asked why people do not use modern medical services, 49% of all respondents declared they could not consult modern doctors because the cost was prohibitive. However, 17% of all respondents indicated that modern approaches were no more reliable than traditional ones. At least 50% of Beled-Amin interviewees declared they lacked faith in modern doctors, a result possibly associated with the community's relative isolation from modern ideas and its vibrant religiosity.

In addition to poor knowledge, many more referred to income constraints and the inaccessibility of services as reasons for not using modern health facilities. Forty-nine percent of all respondents declared they could not use modern doctors because of prohibitive costs, while 30% of the total respondents indicated that modern doctors were not available. It is true that the villagers of Lama-Doonka and Beled-Amin have no qualified medical staff, and even the Afgoi population is largely located at some distance from the pharmacies, which are concentrated in the Dhagahtur sector of the town.

5) CHLOROQUINE AND PREGNANT WOMEN

The exploration of whether pregnant women were inclined to take chloroquine when suffering from malaria was a countercheck of the common belief, already demonstrated in the brain-storming sessions, that chloroquine was harmful to pregnant women. How

TABLE 5: MODERN TREATMENT AND TRADITIONAL PRACTICES

Community	Respondents N	Modern Methods		Traditional Methods	
		%	N	%	N
Afgoi	221	55	122	45	99
Lama-Doonka	103	41	42	59	61
Beled-Amin	102	36	37	64	65
Total	426	47	201	53	225

well this belief was entrenched is unequivocally illuminated by Table 6. As shown, only 3.5% of the total household heads interviewed approved of chloroquine for pregnant women, and of these, only one recognized its prophylactic effect.

This strong bias against chloroquine for pregnant women exposes this vulnerable sector of society to higher risks of disease. To break through this strong cultural barrier, targeted and sustained initiatives are required, focusing on raising community awareness through public education/information. This intervention has to include practical examples to show that this belief has no medical basis.

TABLE 6: CHLOROQUINE VIS-A-VIS PREGNANT WOMEN

Community	Respondents N	Yes for Cure N	Yes for Prevention N	Not at all
Afgoi	221	13	6	202
Lama-Doonka	103	2	1	100
Beled-Amin	102	0	0	102
Total	426	15	7	404

CHAPTER V

SUMMARY AND CONCLUSIONS

Traditional methods are by far the most dominant in the prevention and treatment of malaria in the communities surveyed. However, all participants in the brain-storming sessions in Afgoi and Lama-Doonka indicated that what determined the kind of preventive measures used was the level of income. Relatively poor households used fumigation with maize ear and smoky twigs such as "Qudde" plus the physical method of beating walls and recesses with cloth to drive away the mosquito.

Participants in both sessions also admitted that when all traditional methods of treatment failed, then the patient was taken to a doctor. This implies that members of these communities trust modern medicine, and that their confidence in it is at least on a par with the traditional methods. Nonetheless, the latter are more widely preferred because they are cheaper and more accessible.

As for detection and diagnosis, both communities possessed considerable knowledge about the symptoms of malaria. A critical point to note, however, is that none of the participants in Lama-Doonka were conversant with blood slide testing. In Afgoi, 15% of the participants had gone to the clinic for blood smears on occasion to ascertain whether they had malaria, although this may be due more to their proximity to the health facilities in the town. All participants asserted confidence in their knowledge of malaria symptoms and showed no interest in hospital consultation for blood tests.

In the case of advocating chloroquine for pregnant women, even these relatively enlightened community leaders in both Lama-Doonka and Afgoi were highly sceptical about the use of the drug by malaria-affected expectant mothers for fear of abortion. To break through this cultural barrier affecting one of the most vulnerable sections of society will therefore definitely need sustained efforts through both raising awareness and practical work with pregnant women volunteers.

In short, the study communities learned long ago that the malaria vector was carried by mosquitos. The area itself, due to heavy rainfall and the perennial Shabelle river water, is one of the most heavily mosquito-infected areas in Somalia and is thus noted for its malaria endemicity. Since the end of the Second World War, a number of attempts have been made to control malaria, yet it appears that these efforts have hardly been fruitful for the people of our study sites. To many of them, their traditional thoughts on malaria transmission have hardly improved. For example, the fact that *Anopheles* transmits the disease from one malaria patient to a healthy one is not part of their traditional knowledge. Although their centuries-old and unscientific practices of malaria treatment and prevention are still operational, communal approaches to addressing the problem

have not yet been created.

Unfortunately, the culture of the study communities, in terms of knowledge, attitudes and potential to optimize existing facilities for malaria control and treatment seems to play an important role in the matter. Facilities such as hospital beds, medical staff and blood sampling service units are few, mainly due to socio-economic backwardness. Such facilities need to be expanded and their accessibility to the local communities improved. The cultural dynamism of generating new malaria control/treatment systems and the accompanying environmental sanitation units still has to be born through apt public education and communication initiatives plus new financial resources for investment. No less important is the need to enhance the communities' economies to a degree that they can afford to provide effective malaria control services for themselves.

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