



NOMADIC POPULATION MOVEMENT IN SOUTH-WESTERN SOMALIA
AND ITS INFLUENCE ON THE PLANNING OF SMALLPOX SURVEILLANCE

by

Dr B. Kriz
WHO Consultant
Smallpox Eradication Programme
Mogadishu, Somalia

currently Senior Lecturer in Epidemiology, Charles University
Prague, Czechoslovakia

and

Mr R. Hatfield
WHO Administrative Officer
Smallpox Eradication Programme, Mogadishu, Somalia



Summary

It is estimated that nomadic people constitute 45% of the population of Somalia. They played an important role in the transmission of smallpox in the southern regions of the country during 1977. The influence of their habits, in particular their seasonal movement, on the smallpox containment and surveillance programme is analysed and discussed.

Introduction

The way of life of the rural population of Somalia is directly influenced by the species of animals which are kept. There are three broad categories of nomads:

- (1) nomads herding camels only. These people move constantly throughout the year, have no permanent abode and do not farm the land;
- (2) nomads with cattle but no camels. These persons are also without permanent houses or farms and are constantly on the move;
- (3) nomads with camels, occasionally a few cattle, goats and sheep and with a settled arable farming area where they remain at certain times of the year. Often they have a permanent house in these areas. They are usually termed as "semi-nomadic".

The movement of all groups is dependent on three factors:

- the availability of drinking-water for animals (and people);
- the availability of fresh grass for animal grazing;
- the type and number of insects prevailing in the grazing areas.

The movement of the semi-nomadic population is also dependent on the crop farming habits of the group. They are to be found at their fixed residence during planting and harvest seasons. The availability of drinking-water and of fresh grass for grazing are often inter-related, however, it is the feed for the animals which is of greater importance. Under otherwise suitable conditions, camels are capable of surviving up to three weeks without water. Drinking-water for persons accompanying the herds can be carried on camelback and journeys of up to 30 km to collect drinking-water are not unusual.

During the rainy seasons water is abundant in natural and man-made waterholes. When the rains are over the surrounding grass and leaves are quickly consumed by the herds and the nomads leave these areas even before the waterholes are dry. They move to areas close to the rivers or to areas that were submerged under water during the rains. These flooded

areas cannot be grazed during the rains when they are also inhospitable because of infestation by insects, particularly the tsetse fly. With the end of the rains, standing water quickly dries up, reducing the breeding areas for insects. In addition, adult insects are blown away by the strong winds which commence at this time.

Thus, it is a combination of factors which influences the pattern and timing of the movements of the nomads.

In some districts with large water sources and limited population the nomads move throughout the year in a cycle within a limited area, their movement depending only on the availability of fresh grass. This is only possible in areas of high rainfall, or those bordering rivers, where fresh grass can be found practically throughout the year. In other areas this type of limited movement occurs during the end of the rainy season before the herds move towards the rivers.

The nomads are not always able to forecast where they will move in the near future, although they constantly watch the weather and are able to identify rains at distances of up to 50 km. Scouts then go to the areas and if they find good grazing, return to bring the herds. The herds which move to the river banks or lakeside areas stay there throughout the dry season. With the onset of the first rains they move back, either to the same areas they were in during the previous rains, or to other areas with high ground.

During recent years more and more nomads have been clearing bush and cultivating the virgin land. In some districts, or even whole regions, Bay for example, very few true nomadic groups still exist. Most of the people herding animals are really semi-nomadic with a permanent home near their arable plots where their wives and children remain throughout the year guarding crops and rearing goats and poultry. Each village or group of villages in these arable areas have their own perennial water source, usually man-made. In some cases the families move with the male population and the herds in the bush, leaving only a limited number of usually old people in the settled villages.

The larger domestic animals are not herded near the arable areas during the growing season. They return to the permanent villages only following the harvest at the end of July or early August and in January to graze the stubble. Sorghum and maize are the chief crops. Only the seed head is removed at harvesting, leaving the whole of the remaining plant for animal grazing. When stubble grazing is finished, the herds move back to the bush.

Where families own both camels and cows or goats, the herds are usually divided. The camels are herded in the pattern described above and the cows and goats usually remain closer to a water source, usually within 50 km of the fixed settlement.

The situation in south-western Somalia (Fig. 2)

This part of Somalia is in the area of highest rainfall (Fig. 1), the most southerly parts being the wettest in the whole country, with an annual rainfall of 500-1500 mm. Throughout Somalia there are two main rainy seasons, March to June-July, when the heaviest rains usually fall, and October to December.

In the districts bordering the sea in particular Kismayo, Jamame and Gelib, the nomadic population moves towards the coast during the rainy season. In the interior of these districts, the rains create big lakes of water and the rivers flood some areas and in these wet areas swarms of insects appear. Near the coast the number of insects is much less and the onshore winds prevent them from bothering the animals. In avoiding the inhospitable areas the local nomadic populations generally move only within their home districts. The only exception to this pattern is in Badade District on the Kenya border where the nomadic population consists of two independent groups: nomads who keep camels and live in the southern parts of the district and nomads who keep cattle and live in the rest of the district. This district has the heaviest rainfall of the whole region and consists mainly of tropical jungle

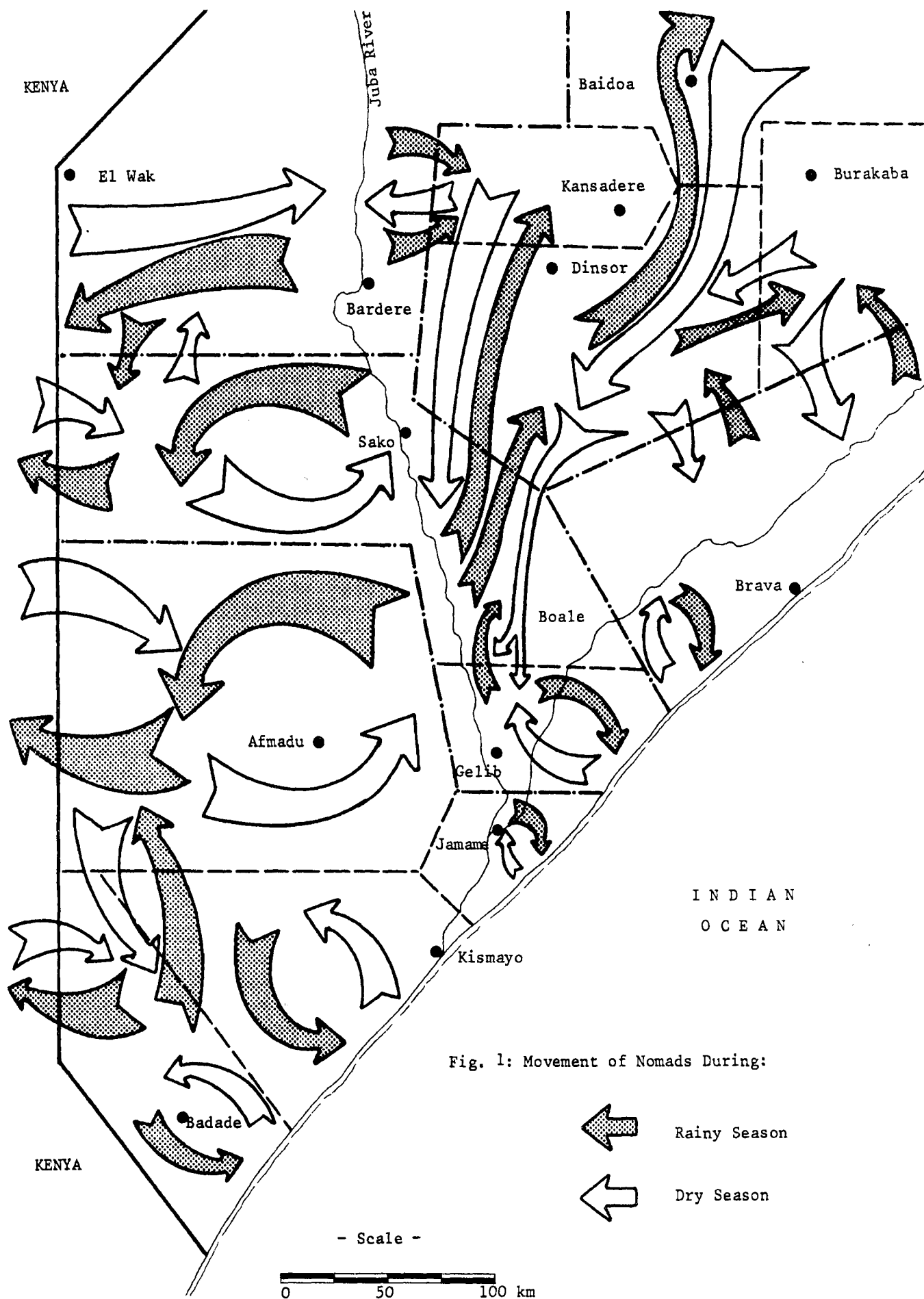
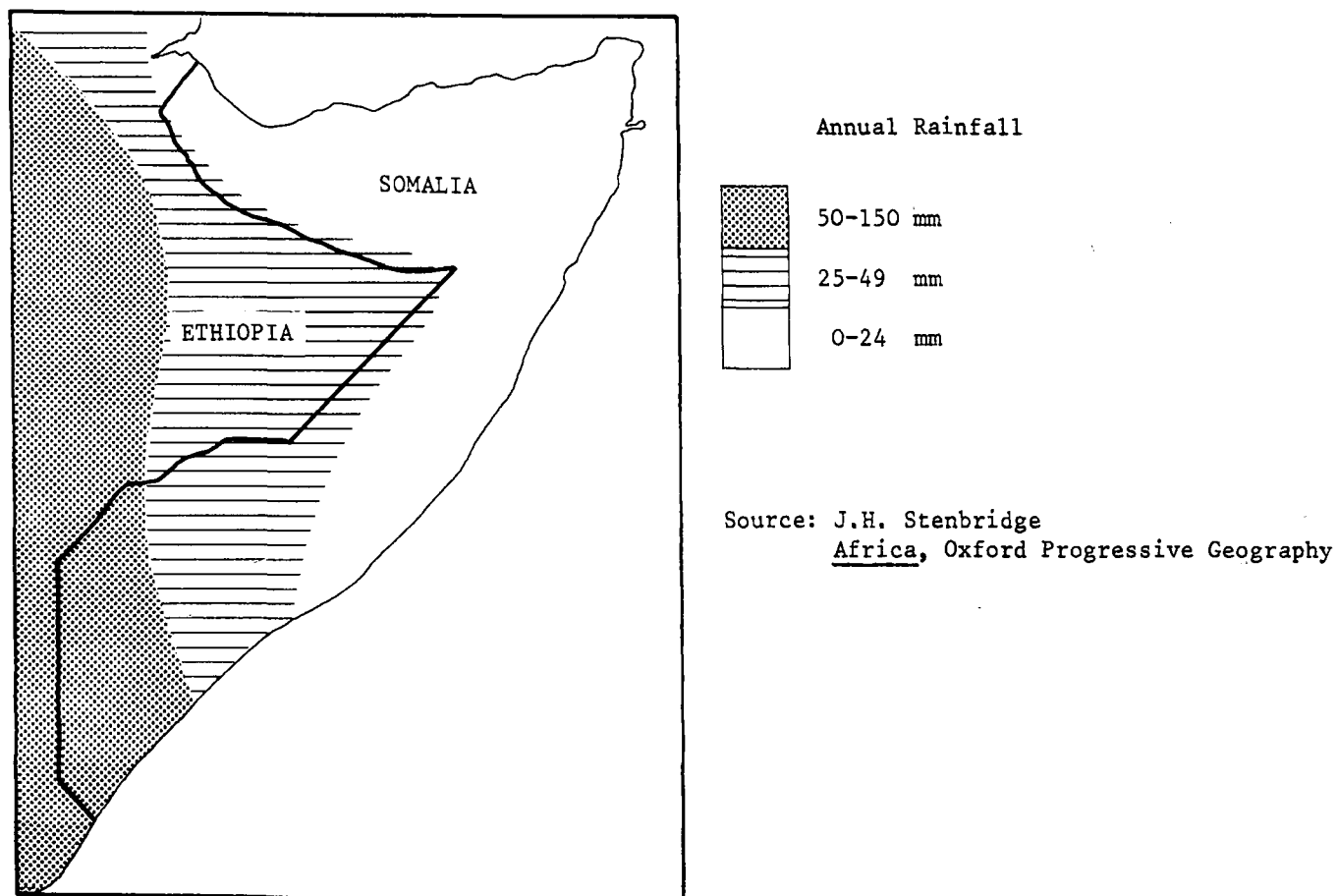


Fig. 1: Movement of Nomads During:

- ← Rainy Season
- ← Dry Season

or dense bush with a negligible amount of cultivated land. Large areas remain water-logged for long periods and an enormous number of insects are found everywhere, especially during the rainy seasons. Therefore, the nomads with cattle move into Kenya at the beginning of the rainy season to the Ramaguda area (localities such as Dananey, Turguda, Mamaldep, Hararloway, Datdhoga). They come back in August, stay for one to two months and with the beginning of the next rainy season move out again.

Fig. 2: Mean Annual Rainfall



The abundance of fresh grass and water, in Badade, even during the one or two hospitable months of the dry season, attracts nomads with cattle from the northern adjoining district of Afmachi.

While in Jamame and Kismayo there is little migration from adjoining districts, in Gelib District the local nomadic population is increased during the dry season by about 3000 other nomads coming from the north, chiefly from Dinsor and to a limited extent from Brava. A similar situation prevails in Lower Shabelli Region where crowds of nomads move seasonally from Bay and Bakool regions towards the coast.

In 1978, in the interior districts bordering the river Juba, from March, and during the rainy season, places near the river and those with standing water were practically deserted because of infestation by insects, particularly tsetse fly. Even the local nomadic population moved out of the area.

Nomadic movement started in the first half of June, and in the second half of the month nomads from Dinsor and Bardere Districts started coming to the Juba river. Groups from as far away as Ufuruo in Kansadere District and Cofgudud in Baidoa Districts of Bay Region were also detected among newcomers. All of 53 groups contacted stated that they would stay near the

Juba river for approximately two months and return to their original places at the beginning of the next rainy season. From the area of the western bank of the Juba river the local nomadic population, with their cattle, left for Kenya during the rainy season. They settle temporarily in areas such as Nambulas, Wel Marer, Burufle, War Anania, Alio Ismail, War Garay, Jilaalow, Wel Adey and Geriley, and return to Afmadow and Sakow Districts during the dry season. From the north the nomads move into two main streams. One heading towards the river, the other towards the Kenya border where there is also enough fresh grass and water. Some of the groups cross the border and, especially this year, those with camels moved to Kenya. These groups return after approximately two months to their original districts. The 1978 situation was, according to the smallpox programme documentation available in M. Juba region, similar to that of 1977.

Smallpox surveillance

The surveillance workers of the smallpox eradication programme were able to contact the nomads either in their original localities (in the bush or, in the case of the semi-nomadic population, at their farms), in those areas temporarily inhabited during the dry season or somewhere between these areas while travelling from one to the other. In addition, it was possible to contact them through searches at waterholes and markets.

Contact at original localities. Bush areas where nomads move are usually easily located. They are known to the inhabitants of the nearest village, and village headmen, members of the village committee or shopkeepers can generally provide valuable information as to how many nomads are settled nearby and in which areas. A search planned on the basis of this information and a good knowledge of the terrain, can be effective. Even relatively small areas of the bush, say 10 km², have their own names, known to the nomads. Maps showing the names of such places, and waterholes, local roads and landmarks such as "yak" trees, are essential. Searchers should move in pairs and at least one should be a man from the area being searched.

The easiest way to contact the semi-nomadic population is to meet them near their fields during the harvest season which is the only time when all members of a family can be found in one place.

Contact at temporarily inhabited (dry season) areas. It is generally more difficult to find the nomads in these areas as they are constantly moving in their search for fresh grass and leaves, which are much less plentiful than during the rainy season. There are usually very few people permanently living in these areas to provide information. The watch guards of government waterholes are the most informed people, even during the period when the waterholes are closed, and can be an extremely useful element of any disease surveillance system. Nomads follow well-used routes between the waterpoints and often gather for some time to exchange information and to do some limited trading.

During smallpox and rash-with-fever searches the searchers obtained detailed schedules of the areas to be visited, with the names of the waterholes where they could be found on a particular day for receiving and checking information they had collected. Verification of rumours by supervisory staff during the search was essential. It was recommended that whenever possible, especially on the State border, searchers were taken to the remotest areas by car (even if this necessitated crossing other districts or regions) and made to return to fixed points through the bush. The other possibility was to send them from the centre to the border asking them to visit the first known village of the next district or area, sign the locality surveillance record card (maintained in each village headman's house), obtain the headman's signature and to return by a different route. During the time of smallpox outbreaks, in some districts, the bush areas were divided among permanent searchers who were responsible for a continuous search. This proved to be effective only for a limited time. With the changed epidemiological situation and a reduction in staff this method was abolished.

Contact during movement. Nomads generally use known routes which they follow each season. In some places the routes are narrow, between lakes or areas of dense bush or over bridges. These are the ideal places to make contact, collect rash-with-fever rumours and

publicize the programme. For effective surveillance permanent checkpoints should be established in such places during the times of nomadic movement. It is useful to combine surveillance of such checkpoints with other activities, for example, veterinary services, first-aid, or the distribution of vitamin pills and chloroquine tablets.

Waterhole searches were found to be of limited value. They can be used as a supplementary method of surveillance during a limited period at the end of the dry season but only in certain areas. In some regions, for example, Bay Region, nearly every village has its own waterhole and there are countless waterholes in the bush with sufficient water available throughout the year. In this region it is useless for searchers to spend time near waterholes waiting for nomads. To cover their allotted area they would have to search many waterholes, while, in the meantime, they could find the nomads more rapidly in the bush. In those areas with a limited number of waterholes or tubewells, particularly those that are government controlled, valuable information can be obtained from their watchguards. Therefore, searchers coming for the first time to a particular bush area should first visit the waterhole and collect general information about the local nomadic movement and the settlements in that area. Once moving in the bush areas they can get enough information about neighbouring groups from the nomads themselves as inquiries made near the water sources provide only basic information about the presence of nomads in the area.

During rash-with-fever surveillance cards showing a smallpox patient and known as "recognition cards" were commonly distributed among nomadic groups to be kept by the headmen. The name of the place where the card was given and the date were marked on the card. Widespread acceptance of the card by the nomads and the discovery of its value as a surveillance record led to the development of a special durable card specifically designed to record the effectiveness of surveillance in nomadic groups.

Market searches also proved to be of limited effectiveness. The female as well as the male nomadic population visit local markets, but they are not easy to contact and they usually avoid giving any information. Generally, the comments on the ineffectiveness of water-source searches are also valid for market searches. Only a limited increase in the surveillance and publicity effectiveness and some information about local nomadic movement can be expected.

Vaccination policy

It was of benefit to the smallpox eradication programme to increase the level of immunity of the population, although it was considered that mass vaccination itself did not play a major role in smallpox eradication in endemic countries. Among a predominantly nomadic population, however, this policy required careful evaluation.

Generally speaking, nomads did not like smallpox vaccination, and in the past they had tried their best to avoid it and devised various ingenious techniques to do so. Potential vaccinees sometimes burned the skin in the deltoid area with a stick from a fire which produced a scar resembling that of a smallpox vaccination. On one known occasion such a burn was made on the arm of a one-year-old child with a burning stick or cigarette just a few minutes before the child was examined. The child was then vaccinated and after six weeks it was difficult to distinguish between the two scars. Another method used to simulate vaccination was to cause scarring by rubbing into the skin the saps of "warankol" or "darken" trees. These practices were taken into consideration when conducting vaccination scar surveys in Somalia. In fact the high vaccination coverage reported in the past by some epidemiologists did not correspond with the epidemiological situation which developed in 1977.

Searchers who tried to vaccinate nomads were often jeopardizing future cooperation. Also, as most of the children and some mothers with babies ran away into the bush, searchers were able to contact only a small percentage of the nomadic group to pass on information about the reward and where to report smallpox cases, and to look for rash-with-fever cases. In addition, searchers preoccupied with vaccination were not always thorough in their other duties. It was impossible to find people once they had run off into the bush, and from the experience of 1977 it was clear that most of the people infected by variola minor were in good physical condition during the illness and could move easily.

Vaccination during waterhole and market searches was of insignificant value because of the very limited portion of the population that is contacted.

The last smallpox transmission among nomads

Nomads played a significant role in smallpox transmission in Somalia. Scattered in the bush they were difficult to contact by routine surveillance methods. Moreover, being afraid of isolation camps and vaccination they often hid smallpox cases. The change in the containment strategy, from isolation camps to isolation of patients near their settlements and in some cases even movement of the whole containment team with them to new grazing areas, changed their attitude towards the programme. The use of correct vaccination techniques with an explanation of the harmful effects of rubbing the vaccination site with soil, leaves, water or salt and of scratching it with fingernails, decreased the number of postvaccination complications and, thus, the fear of vaccination. Persuasion rather than insistence by the containment teams, along with the distribution of vitamin pills, antimalaria drugs and, in some instances, simple treatment of other diseases, also helped. The reward for case reporting and daily allowances for patients helped to maintain a cooperative attitude.

Nonetheless, in general, containment activities strongly influenced the nomads' way of life and they still often attempted to avoid them by hiding cases. It is to their credit, however, that once outbreaks were found they were most cooperative.

Table 1 and Fig. 3 show the increased proportion of the total number of smallpox outbreaks reported in nomadic groups, during the weeks of April to July in Baidoa District of Bay Region. Out of 321 outbreaks reported from this district in 1977, 120 outbreaks (37%) occurred among nomads.

It is clear that in the beginning mainly outbreaks in permanent villages were found, however, in the last week of July a peak of 89% of all reported outbreaks in this area were among nomads. The curve does not reflect the epidemiological situation among nomads, but rather illustrates the development of smallpox surveillance sensitive enough to detect outbreaks even in the remotest bush areas.

Discussion

Although data on nomadic movement is obtainable at a particular time during any given year, this information cannot be used to predict the actions of nomads at any subsequent time. Their movement is entirely dependent on the weather. General movement following the dry or wet seasons may be anticipated, however, the distances involved and the number of nomads present in any area at any time is beyond accurate prediction.

The "nomadic smallpox surveillance record cards" used by the eradication programme provided a good record of the movement of nomads and also allowed assessment of the effectiveness of the smallpox search.

Despite the difficulties encountered, nomads and the "semi-nomadic" population were vaccinated effectively in their farming areas or at carefully controlled and well-staffed checkpoints.

Waterhole searches planned and conducted as an independent element of surveillance, utilizing full-time searchers at waterholes to collect information about rash-with-fever cases did not yield the expected results. During 1977 not a single smallpox outbreak was found by this method, even in areas where nearly every second nomadic group was affected (e.g. Baydoa, Kansadere). Outbreaks were either reported by the public claiming the 200 Somali shilling reward or found by smallpox staff during house-to-house searches. When questioned as to whether smallpox infection was present, people in affected settlements or even affected isolated houses often replied negatively. None of the outbreaks of Baidoa district was found only by questioning of the people. The most recent extensive waterhole search, conducted in Baidoa district in April 1978, yielded similarly poor results; members of 647 nomadic groups were contacted and not a single rumour was obtained.

Fig. 3: Percentage of Total Outbreaks Occurring Among
Nomadic Population in Baidoa District, April-July 1978

