Community Approach to Fight against Noma in a Developing Country: The Case of Senegal

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Abstract:
Background: Noma is a disease of early childhood and is unknown to the health staff and community. Prevention and care become difficult. To help eliminate this disease in the population of Senegal, we conducted a study, which aim was to improve the fight against noma in our country.

Materials and Methods: The study was conducted from 2012 to 2014 at the district level health, regions of Saint-Louis, Matam, Kaolack, and Diourbel. The activities focused on pleading, training, sensitization, epidemiological supervision, and management of cases.

Results: The pleading focused on all the district local authorities. For the training, 94.6% of people from rural areas: Community health workers, traditional birth attendants, relays, traditional healers, nurses, and midwives. Awareness concerned 2500 persons consisting of mothers, members of social associations, and women’s groups. As regards epidemiological supervision, 96.5% of detected cases of noma and necrotizing gingivitis were from rural areas. 31 cases of noma were diagnosed from 2012 to 2014 including 6 in 2012, 15 in 2013, and 20 cases in 2014. The vast majority of these cases (75%) were managed at the level of health boxes at the beginning of the disease.

Conclusion: The management of noma based on pleading, training, staff awareness of health, community, and people (especially mothers) can greatly contribute to screening and treatment of cases. The approach to fight against this disease in developing countries can be recommended for a better understanding of the pathology to eliminate it.

Key Words: Community approach, developing countries, noma, Senegal

Introduction
Noma is a disease of early childhood affecting from 0 to 6 years old. Most affected children are from 3 to 4 years.¹ It occurs on malnutrition and deficiency environment and unhygienic conditions. The children with infectious diseases, viral, parasitic, or not having complied with the immunization schedule are likely to develop the disease. The same is true for children who have suffered a brutal and early weaning. A very high percentage of these children (95%) die before getting in a structure of health care.² Yet, this disease is unknown by the health personnel and community.¹,³ This ignorance of the disease makes the prevention difficult and contributes to the increase of its prevalence and incidence.

The aim of our work was to participate in reducing the prevalence and incidence of noma.

The overall objective was to improve the fight against this disease in Senegal.

The specific objectives were:
- Make a plea to all local authorities of each health district;
- Provide annually at least one training session for all health workers of health districts;
- Organize annually at least one meeting of Information - Education Communication (IEC) toward mothers, traditional healers, community health workers, matrons, and relays;
- Develop an epidemiological supervision system of noma at the district and national level;
- Develop a system of care management for cases of noma in each district and national level.

Materials and Methods

Type and frame of study
It was a study on the organization of the fight against noma level of health districts of Senegal, which constitute the framework for our work.

Medical regions of Saint-Louis, Matam, Kaolack, and Diourbel were involved in this study. They were considered the most affected by the national survey of noma conducted from 2000 to 2007 in Senegal. Saint-Louis and Matam are located to the north and borders with Mauritania and Diourbel and Kaolack is the center of the country.

Targets and organization of the fight
The study was conducted from 2012 to 2014. In the beginning, a circular signed by the Minister of Health addressed to all heads of area physicians to inform the conduct of activities focused
on pleading, training, IEC, epidemiological supervision, and management of cases.

**Pleading**
It concerned customary, religious, political health, and administrative local authorities; All these people had received information on noma and the importance of taking into account the activities of the locality.

**Training**
Two documents had been prepared. One was intended for nurses and midwives and focused on risk factors, warning signs, the different phases of the disease, methods of prevention, and care at every stage of the disease. Another document was addressed to staff and focused on predisposing factors, warning signs, methods of prevention, and early reference.

Training methods advocated were the interactive method and the slides that were followed by commentary. The training team was multidisciplinary even multisector to integrate all the determinants of noma. At the beginning of each training session, a pre-test was administered; and at the end, a post-test was organized.

**IEC**
It focused on the community personnel. The promotional material consisted of posters, pamphlets, flip charts, radio spots, and television. Awareness was especially focused on different aspects such as nutrition, oral hygiene, and monitoring of the immunization schedule, which are the key elements of the fight against noma.

For nutrition emphasis was placed on the balance. Some local products could well serve as an alternative to the daily protein intake: The ketikak (grilled fish and then dried) and niébé (beans), very high in protein could replace the meat that is often inaccessible for most Senegalese. Regarding oral hygiene, the emphasis was on methods of prevention and counseling and food hygiene. The stick for rubbing tooth advocated in areas where it had proved effective that the toothpaste and toothbrush were inaccessible geographically and financially. The importance of monitoring of the immunization schedule was also explained to mothers to avoid contracting infectious diseases, such as measles, which are important predisposing factors of noma.

**Epidemiological surveillance**
In each health district, a focal point was appointed. It was the same for each medical region. The data on noma were registered in each district by the focal points in each region to be sent to the central level.

The management of the disease at each stage and for each level (of the mother in the box, post, and health center) was explained in the training document.

The data were entered and analyzed with SPSS software and presented as texts and tables.

**Results**

**Pleading**
All regional and district head doctors had been pleaded and all local authorities (religious, customary, administrative, and political).

Noma was included in the plans and the integrated surveillance system and the response against the disease at the district level.

**Training**
The average pre-test was 5 with a tooth decay index of 95% between 0 and 7 while the post-test was 16 with 95% between 14 and 18. The type of personnel trained is represented by Table 1. 94.6% were from rural areas and 5.4% consisted of physicians, dentists, and technicians in dentistry (OSI) based in urban areas. Two sessions of training per district were conducted each year.

**IEC**
Awareness concerned 2500 persons consisting of mothers, health community workers, matrons, and other opinion leaders at the village level.

Media outreach was represented by 300 posters, 400 shirts, 300 pamphlets, 100 picture boxes, 20 community radio, and 3 TV spots.

**Epidemiological surveillance**
In each health district, a focal point was designated to identify cases of noma. These focal points were with the program manager at the central level the system that was set up to organize epidemiological surveillance at the national level.

Cases of necrotizing gingivitis and noma detected mainly from rural areas with 96.5% (Table 2). In total 31 cases of noma,

<table>
<thead>
<tr>
<th>Types of personnel trained</th>
<th>n (%)</th>
<th>% Cumulé</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physicians</td>
<td>16 (1.8)</td>
<td>1.8</td>
</tr>
<tr>
<td>Dental surgeons</td>
<td>16 (1.8)</td>
<td>3.6</td>
</tr>
<tr>
<td>Technicians in dentistry</td>
<td>16 (1.8)</td>
<td>5.4</td>
</tr>
<tr>
<td>Chief nurses</td>
<td>18 (1.45)</td>
<td>19.9</td>
</tr>
<tr>
<td>Community health workers/midwives</td>
<td>624 (71)</td>
<td>90.9</td>
</tr>
<tr>
<td>Tradipraticiens</td>
<td>80 (9.1)</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>880 (100)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Place of résidence</th>
<th>Case of necrotizing gingivitis (GN)</th>
<th>Case of noma</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>7 (1.88)</td>
<td>6 (1.62)</td>
<td>13 (3.5)</td>
</tr>
<tr>
<td>Rural</td>
<td>333 (89.75)</td>
<td>25 (6.75)</td>
<td>368 (96.5)</td>
</tr>
<tr>
<td>Total</td>
<td>340 (91.63)</td>
<td>31 (8.37)</td>
<td>371 (100)</td>
</tr>
</tbody>
</table>

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start stages, state, and consequences were recorded for 3 years including 06 in 2012, 15 in 2013, and 20 in 2014.

Support
About 75% of cases were diagnosed and managed at the boxes and health posts, while 25% had been at the health centers.

Discussion
Advocacy
The plea was directed to local customary, religious, administrative, political, and health authorities. He had helped to integrate noma in the entire district’s plans. Programs that were implemented and those services should now integrate the fight against noma in their daily activities. The World Health Organization (WHO) also advocates an integrated approach in the fight against noma with involvement of programs such as the Integrated Management of Childhood Illness, traditional medicine, reproductive health, primary health care, acquired immune deficiency syndrome, and health education. Noma should also be included on the list of neglected diseases, which increasingly are beginning to occupy an important place in the health system of countries and WHO. Funding for these diseases will sustain all the activities that are being conducted at the country level to fight against noma. This fight should take into account the specificities of each country. Therefore, Ouaba et al., in 1998, emphasized the importance of socio-cultural aspect and based on local authorities as well. In Senegal, some traditional or religious authorities have a great reputation and references for the entire population. These authorities could provide as an intermediary between people and health services.

Training
The results of the tests (pre- and post-test) we can assure that the training had enabled a better understanding of the disease by health workers, the staff, and mothers. It concerned mostly the community level because 94.6% of trainees were from rural areas: Community staff, 71%; health staff positions, 9.1%; traditional, 14.5% (Table 1). Already in 1963, Emslie in Nigeria called for this approach based on the community in the fight against noma in developing countries. Lazarus and Hudson. In Senegal, some traditional or religious authorities have a great reputation and references for the entire population. These authorities could provide as an intermediary between people and health services.

Enwonwu et al., in Nigeria in 1999, suggested this approach in staff training to combat against exposure to infectious diseases, which are important factors in the arising of noma in Africa.

IEC
All these outreach activities were organized in the form of campaigns directed, especially in rural areas. Barms et al. proposed already, in 1994, these campaigns in the fight against noma in developing countries.

Ndiaye et al., in 1999 in Senegal, made the link between the quantity of cases detected earlier and the frequency of these campaigns. Smith in South Africa had long before, in 1979, emphasized the importance of awareness among mothers in the early detection of noma.

Epidemiological supervision and support
The evaluation of cases detected between 2012 and 2014 seemed to suggest that the incidence of disease increased from year to year. The increase in cases is mainly due to a better understanding of the disease by the population and health staff because of training and awareness. In literature, the majority (95%) of reported cases of noma died before arriving in a structure of care. The training should reduce this figure by the action of the community and health workers. These latter by detecting cases in the early stage develop more skill to prevent the disease or refer them if necessary because being aware of the seriousness of the disease evolution. This case detection was facilitated and organized by designated focal points to identify and centralize all patients in the districts and regions. This had also contributed to the increase in cases detected. These latter increased with the training and awareness of health and population. Bourgeois et al. in a retrospective study in Senegal, who had identified 199 cases for 13 years, proposed the implementation of an epidemiological surveillance system. Our study showed that 75% of cases were detected and treated at an early stage in rural areas (Table 2). The fact of treating all cases at the beginning of the disease arising proves that the staff and community nurses had received training which had enabled them to be operational. Noma was more frequent in rural areas which often faced with difficult socio-economic conditions. Idigbe et al., in Nigeria in 1999, linked the disease arising to the living conditions of populations. Indeed, the risk of developing the disease was much higher among the children of North-West of Nigeria deprived than those in the South-West with improved socio-economic conditions. Noma is described by some authors as a disease of poverty.

Conclusion
Noma is a disease of poverty and is on the increase in developing countries, which are the first to feel the consequences of a global economic crisis more acute. Its management must be based on prevention and training, awareness of health staff, and especially the community one and the public. It should also be multidisciplinary and multisectoral integrating all programs implemented at the level of health districts.

Noma should also be included on the list of neglected diseases at the WHO, which increasingly have resources for its care.

References


