Leprosy Control Programme in Thailand

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In 1953, the total number of leprosy cases, estimated by W.H.O., was 140,000 throughout the kingdom, as the prevalence rate of 5 per 1,000. Since then the Leprosy Control Programme was started. It was 37 years ago. This paper gives an overall view of the current status of leprosy in Thailand.

In this paper, the following articles are reported.
1. The Country
2. Health Situation
3. Historical Background of Leprosy Control in Thailand
4. Current Leprosy Situation
5. The National Leprosy Control Programme
6. Training Programme at Leprosy Division, Department of Communicable Disease Control (CDC), Ministry of Public Health
7. Research Activities
8. Multiple Drug Therapy (MDT) Regimen
9. Achievement of MDT (Usage)
10. An Example of Leprosy Patient in Thailand
11. Epidemiological Evaluation:
   I. Prevalence
   II. Incidence
   III. Deformity Rate
   IV. Case Detection

1. The Country

Thailand is a country of 513,115 Km² on the Indo-China peninsula of Southeast Asia between 5-21 degree north latitude and 97-106 degrees longitude. It is divided into 4 geographical regions, the central (including Bangkok as the capital city), the northern, the northeastern and the southern region. The central region is more prosperous relatively and densely populated than the others, where as the northeastern is the largest land areas but the least economically developed. The country is divided into 73 provinces, approximately 700 districts, 5,000 sub-districts (Tambon) and around 55,000 villages. This is the tropical country and majority of the population engage in agriculture. Thais, Chinese and others form the majority of the population. Leprosy is hyperendemic in the northern region, mesoendemic in central and northern region, and hypoendemic in southern region.

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Thailand's population on December 1988 contains 54,960,917 inhabitants with the population growth rate of 1.7 percent.

2. Health Situation

The so-called health situations in the society of Thailand are as follows:

I. Crude birth rate \[= 21.5/1,000 \text{ population (1991)} \]

II. Crude death rate \[= 13/1,000 \text{ population (1991)} \]

III. Infant mortality rate \[= 5/1,000 \text{ population (1991)} \]

IV. Five top causes of mortality as shown in Table I

V. Five top causes of morbidity as shown in Table II

VI. Number of doctors \[= 0.159/1,000 \text{ population (1984)} \]

VII. Number of nurses \[= 0.629/1,000 \text{ population (1984)} \]

VIII. Number of personal health services including all categories \[= 1.66/1,000 \text{ population (1984)} \]

IX. Number of hospital beds \[= 13.40/1,000 \text{ population (1984)} \]

X. Average daily calories intake per capita \[= 1,751.00 \text{ (1986)} \]

XI. Type and percent of health services as shown in Table III

Table I: Five top causes of mortality (1984)

<table>
<thead>
<tr>
<th>Cause groups</th>
<th>Rate/100,000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Diseases of pulmonary circulation and other forms of heart disease.</td>
<td>33.3</td>
</tr>
<tr>
<td>II. Diseases of digestive system other than oral cavity, salivary glands and jaws.</td>
<td>20.1</td>
</tr>
<tr>
<td>III. Other accident. (including late effect)</td>
<td>18.7</td>
</tr>
<tr>
<td>IV. Malignant neoplasm of other and unspecified sites.</td>
<td>14.9</td>
</tr>
<tr>
<td>V. Homicide and injury inflicted purposely by other persons.</td>
<td>14.6</td>
</tr>
</tbody>
</table>

Table II: Five top cause of morbidity (1984)

<table>
<thead>
<tr>
<th>Cause groups</th>
<th>Rate/1,000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Diseases of respiratory system.</td>
<td>132.8</td>
</tr>
<tr>
<td>2. Symptoms and ill-defined conditions</td>
<td>104.8</td>
</tr>
<tr>
<td>3. Diseases of the digestive system</td>
<td>76.1</td>
</tr>
<tr>
<td>4. Infectious diseases.</td>
<td>64.2</td>
</tr>
<tr>
<td>5. Accidents, poisoning and violence</td>
<td>44.6</td>
</tr>
</tbody>
</table>
3. Historical Background of Leprosy Control in Thailand

For many decades, leprosy has been considered as a major problem in Thailand. The National Leprosy Control Programme was launched in 1953, as a pilot project, in Khon Kaen province, Northeastern region. The random sampling survey was assisted by WHO and UNICEF. The prevalence rate of leprosy was 5 per 1,000 or 140,000 leprosy patients throughout the Kingdom. The control strategies were based on the processes of active case finding survey, dapsone monotherapy, follow-up of the cases known as the leprosy patients, surveillance of household contact cases and school-children in the operational area. After that, the Provincial Leprosy Unit had established in all endemic areas to keep under the regular follow-up and the treatment for all registered cases.

The integration of leprosy control activities into general health service in Thailand started in 1971 and gradually expanded to cover 67 hypoendemic provinces out of 73 provinces in 1976. Meanwhile 6 hyperendemic provinces were remained as the specialized leprosy control services. They are Mahasarakram, Kalasin, Roi-et, Surin, Saraburi and Nakornsawan province. From 1983 until now MDT has been used instead of dapsone in about 92% of all leprosy patients in Thailand.

The situation of leprosy in the past could be shown in Fig. I.

Fig I: Total registered, newly detected and RFC 1975-1989

![Graph showing leprosy cases](image)

RFC = Released from control.

4. Current Leprosy Situation

From 1953 to June 1989, 163,224 leprosy cases have been detected and registered for treatment. 145,930 cases of patients have been released from the control. Until the end of June 1989, the situation of leprosy in Thailand was as follows:

1. Total registered cases: 17,294
II. The ratio of paucibacillary (PB) to multibacillary MB) cases........1 : 2
III. Prevalence rate/1,000..............0.31
IV. Child rate........2.7%
V. New registered cases in 1989............1,249
VI. Deformity (grade 2+) in new cases........11.2%
VII. Deformity (grade 2+) in old cases........28.3%
VIII. Number of completed MDT to June 1989

   MB............ 7,759
   PB............16,149
   Total..........23,908

IX. Leprosy control man-power

   Doctors
     Full-time 40
     Part-time 1

   Public health nurses 34

   Other technical workers 337

X. Financing of leprosy control activities (1988)

   Government budget for leprosy........US $ 3,215,060
   Government budget/registered case........US $ 112.4
   Percent of leprosy budget in the total Health budget......0.775%

Table III. Types of health services

<table>
<thead>
<tr>
<th>Type of health services</th>
<th>Urban %</th>
<th>Rural %</th>
<th>Total %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self remedy.</td>
<td>36.4</td>
<td>44.0</td>
<td>42.3</td>
</tr>
<tr>
<td>Government health centre.</td>
<td>4.9</td>
<td>20.0</td>
<td>16.8</td>
</tr>
<tr>
<td>Government hospital</td>
<td>14.1</td>
<td>20.0</td>
<td>16.8</td>
</tr>
<tr>
<td>Private hospital</td>
<td>2.8</td>
<td>1.2</td>
<td>1.5</td>
</tr>
<tr>
<td>Private clinic.</td>
<td>38.8</td>
<td>13.3</td>
<td>18.9</td>
</tr>
<tr>
<td>Traditional healers.</td>
<td>-</td>
<td>5.5</td>
<td>4.2</td>
</tr>
</tbody>
</table>

Sample sizes. 1,063 3,805 4,868

5. The National Leprosy Control Programme

The National Leprosy Control Programme was started since 1953 under the Department of Communicable Disease Control, Ministry of Public Health. The Programme was vertical in the characteristics (Fig.II). Thailand has 2 leprosaria, 12 colonies, 2 special skin clinics in Bangkok and 22 provincial leprosy centers (Fig.III).

Overall in-patient number are 3,955 (1989) (Table IV). Entry into Leprosarium is only directed by the Review Board. The Board is a committee comprising of medical doctor, the social worker and the Director of the Leprosarium.

The control activities are directed to: I. Out-patient infrahealth structure such as hospital and health centers, establishment of special skin clinic in some urban area; II. The follow-up of registered and
Fig II: Organization of Leprosy Division

Ministry of Public Health
Department of Communicable Disease Control

Leprosy Division
Social Welfare Section
Administrative Section

Phra Pradeang Hospital
Leprosy Settlement Section
Pharmacy Section
Planning and follow-up Section

Bangkok Skin Clinic
Bangkean Skin Clinic

Rajprachasamai
Institute
Nonsomboon
Leprosarium
Khon Kaen

1-12 Zonal Leprosy Centres.
22 Provincial Leprosy Centres.
12 Leprosy Settlements.

Fig III: Map showing 12 Leprosy Control Centres:

- Colony
- Leprosarium
treated cases until the disease becomes inactive and continue the follow-up of those who have most chance to relapse and become infectious again; III. protection of susceptible population, particularly household contacts of registered cases and school children; IV. The training of medicine and auxiliary personnel and other persons such as Primary Health Care Worker with a role to play in leprosy control; V. The prevention of disabilities and domiciliary rehabilitation of leprosy cases; VI. Social assistance to patients and their families; VII. The applied research in finding effective tools to accelerate the achievement of leprosy control; VIII. The evaluation of the leprosy control programme by conducting random sampling surveys in leprosy endemity at interval of 5 to 10 years.

6. Training Programme at Leprosy Division, Department of Communicable Disease Control, Ministry of Public Health

Training plays an important role of the National Leprosy Control Programme. The training programme is conducted by the Leprosy Division, Department of Communicable Disease Control, Ministry of Public Health, Thailand.

The training course concerns the leprosy control for the medical and paramedical staffs such as assistance nurses, public health inspectors, medical laboratory technologists, staff nurses and so on.

For prevention of deformities and rehabilitation, the Leprosy Division is providing the special training as follows.

<table>
<thead>
<tr>
<th>Region</th>
<th>Zone</th>
<th>Name</th>
<th>Province</th>
<th>Number of inpatients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central</td>
<td>10</td>
<td>Phra Pradeang</td>
<td>Samuth Prakran</td>
<td>1,160</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Leprosarium</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dong Tab Colony</td>
<td>Chantaburi</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Praeng Khayang Col.</td>
<td>Chantaburi</td>
<td>588</td>
</tr>
<tr>
<td>Northeast</td>
<td>4</td>
<td>Nonsomboon Lepros.</td>
<td>Khon-Kaen</td>
<td>1,032</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Amnaj Chareon Colony</td>
<td>Ubol-Rajthani</td>
<td>349</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Prasart Colony</td>
<td>Surin</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Salapoom Col.</td>
<td>Roi-et</td>
<td>110</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Banhan Col.</td>
<td>Mahasarakram</td>
<td>80</td>
</tr>
<tr>
<td>Northern</td>
<td>5</td>
<td>Huay Klee Colony</td>
<td>Maehongsong</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Fai Kaew Col.</td>
<td>Nan</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Ban Grang Colony</td>
<td>Pitsanuloke</td>
<td>189</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Mae Loa Colony</td>
<td>Chiang Rai</td>
<td>112</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Mae Tha Colony</td>
<td>Lampang</td>
<td>12</td>
</tr>
<tr>
<td>Southern</td>
<td>8</td>
<td>Pud Hong Colony</td>
<td>Nakronsrithamraj</td>
<td>196</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3,955</td>
</tr>
</tbody>
</table>

Table IV: Settlements for leprosy patients
I. Training for the staffs concerned in leprosy
   A. Standardization workshop for trainer
   Two teams of trainer (27 trainers) consisted of surgeon, ophthalmologist, physiotherapeutist, occupational-therapeutist, nurses, social worker, health educator and orthopaedist have been participated in this workshop on prevention of deformities and rehabilitation for the leprosy to be held during 6-4, February, 1989 at Phrapradeang Hospital.
   B. Seminar on prevention of deformities and rehabilitation
   A seminar was held during 17-21, April, 1989 at Phrapradeang Hospital. The participants were the Directors of 12 Zonal Centers and Directors of CDC Zonal Centers. The main objective of this seminar was to prepare the plan of action at the Zonal Center level.
   C. Training of zonal rehabilitation teams
   The zonal rehabilitation teams composed of 48 staffs from 12 Leprosy Zonal Centers attended at this course on 15-24, May, 1989 at Phrapradeang Hospital and Nonsomboon Leprosarium, Khon-Kaen province. The zonal rehabilitation team will be responsible for the implementation of plan and providing technical support, supervision to provincial health staff as well as health communicator and health volunteer at village level.
   D. Training for several workers concerned in leprosy
   280 leprosy staffs from 12 leprosy zonal centers were trained during June to December, 1989.

II. Training of provincial health staffs and volunteers (at the district level)
   A. Workshop for medical officers and nurses at district hospital
   B. Training of officer staffs at the Health Center in the respective districts
   (Volunteers concerned in the leprosy will be selected and the training will be hold according to schedule.)

III. Self care clinic (SCC)
   Every leprosarium and zonal centers have to set up the SCC and try to persuade the provincial wealth staffs of join the clinic.

IV. Establishment of 5 shoe making and orthopedic centers
   5 shoe-maker centers have been trained and the simple foot wears were produced for the patients. They are Phang Kayang Colony (Chanthaburi), Amnajchareon Colony (Ubonratchathani), Mea Loe Colony (Chiangrai), Phud Hong Colony (Nakhonsrithamaraj) and Ban Krang Colony (Pitsanuloke).

V. physiotherapeutist
   As there is shortage of physiotherapeutist in the field of leprosy, the Government is trying to seek the physiotherapeutist.

VI. Surgical team and supervisory team
   Phrapradeang Hospital is the center for this field.

7. Research Activities
   In 1979, a new research building was established and attached to the Raj-Pracha-Samasai Research and Training Institute which was built by His Majesty the King in 1960. This building, which was inaugurated by His Majesty the King in 1979, was jointly donated by Hartdegen Fund, Germany and fully equipped by the assistance from Sasakawa Memorial Health Foundation, Japan. Since then, WHO and UNICEF ceased their main assistance. From 1976, the Foundation subsequently contributed to assist the leprosy control, training and research activities in Thailand, which focus upon there interrelated areas as follows: I. Provision of necessary drugs, vehicles, audiovisual aids, medical and laboratory equipment, fellow-
ships and so on; II. Research and development toward new and improved tools to control the leprosy; III. Strengthening of national leprosy institutions, including training to increase the quality of control measures and to increase the research capabilities of leprosy physicians, scientist and other related staffs. The research activities of the Leprosy Division focus upon clear and practical area such as: I. Joint chemotherapy trials (Thailand, Korea, Philippines, and Japan); II. Immunological studies on the use of FLA-ABS test (Fluorescent lepromatous antibody absorption test) in the detection of subclinical infection in leprosy; III. Epidemiological and operational evaluation of leprosy control programme; IV. Social and economic research; V. Immuno-epidemiological research; VI. Epidemiology of dapsone resistance; VII. The application of nude mice as the new model in animal experimental research; VIII. Multiple drugs trial in multibacillary and paucibacillary leprosy, with the reference to newly recommended regimen of WHO; IX. Optimum methods for case-finding, case-holding and release from the control in the programme; X. Health service research on the role of district health office, primary health care workers and community in the participation in strengthening of integrated leprosy control services.

8. **Multiple Drug Therapy (MDT) Regimen**

In 1984, MDT was introduced in Thailand through WHO. Leprosy patients (around 92% of the patients) have been treated with this regimen.

I. **WHO recommended standard regimen for multibacillary leprosy (BT with B.I.> 2, BB, BL, and LL)**

- Rifampicin 600mg once-monthly, supervised
- Dapsone 1-2mg/kg body weight, daily
- Clofazimine 300mg once-monthly, supervised, and/or 50mg daily

(In the case of allergic patients to clofazimine, the drug makes it rule to replace by 250mg daily dose of ethionamide or prothionamide.)

After the treatment is started, the patients will be requested to follow-up every 1-3 month. And when the slit skin smears show the negative results, the patients will receive the following drugs for 2-3 years and then they will be released from the control.

- Rifampicin 600mg once-monthly
- Dapsone 1-2mg/kg body weight, daily

II. **WHO recommended standard regimen for paucibacillary leprosy (I, T, BT with B.I.< 2)**

- Rifampicin 600mg once-monthly for 6 months
- Dapsone 1-2mg/kg body weight, daily for 1 year

9. **Achievement of MDT Usage**

It seems likely to be that the usage of MDT gains some success on the treatment of leprosy in Thailand.

I. Decrease of the prevalence rate in leprosy

The prevalence rate was declined from 0.9 (1984) to 0.31 (1989) (Fig. IV).

II. Increase of released cases from the control

The total number of patients whom releases from MDT treatment were 34,887 cases (from 1984 to December 1989). There were 18,459 cases in dapsone era (from 1971 to 1983).

III. Decrease in the number of reaction cases

There has been declining in the number of ENL (erythema nodosum leproma) cases from 1.24% in 1987 to 0.85% in 1989.
10. An Example of Leprosy Patient in Thailand

A patient who has the skin lesion, first, visits the general out-patient clinic or goes to the clinic of dermatology directly. In the general clinic, the patient is referred to consult with the clinic of dermatology for proper diagnosis and/or investigation if the physician is uncertain about the diagnosis. With this way, the patient skin problem will be detected at the skin clinic. Once the diagnosis of leprosy is confirmed, the patient will be referred to the nearest leprosy center. For the first visit to the leprosy clinic, the patient will be thoroughly examined, e.g., mapping the skin lesion, slit skin smear, nerve examination, site of ulcer, grading the deformities, type grading and others. MDT is prescribed depending on the type of leprosy. After that, the patient will be sent to the self care clinic to: I. Survey of other contact cases; II. To learn how to care the ulcer and to prevent ulcer occurring; III. To learn how to minimize the paralyzed parts and/or to minimize the paralysis.

Follow-up at the clinic for medication every 1-3 months depends on how far to the patient's house. The slit skin smear will be done once every 6 months for multibacillary cases and once yearly for paucibacillary cases. The patient will be hospitalized when moderate to severe ENL, reconstructed surgery, deep ulcer which needs the intensive care and other necessary medical problems. If the patient had been transferred, his or her record will be sent to the Central Registry and then to the leprosy center nearest to their new residence.

All the course of leprosy treatment and the medicine service are provided freely by the Leprosy Division. A leprosy patient, who wish to be an inmate at the leprosarium, has to be requested permission from the Review Board. The patient who has severely handicap, poor financial background, low social status
and so on will be admitted in the leprosarium. Such a patient will be given a small house with kitchen and bath room. The living allowance are given to all leprosy patients. But the severely handicapped are put in the wards. They are attended on by doctors and nursing staffs of the Leprosy Division.

11. Epidemiological Evaluation

I. Prevalence

The true prevalence rate of leprosy is not known. In 1953, the leprosy patients throughout the Kingdom were estimated at around 140,000 by WHO and UNICEF. The rate was 5 per 1,000 population. In 1989, the rate was 0.9 per 1,000 population when MDT was started in Thailand. In 1989, the rate was 0.31 per 1,000 population. From 1972 until recently the northeastern region is showing the highest prevalence rate (Fig. V).

Fig V: Regional prevalence rate in Thailand:

II. Incidence

The incidence rate of leprosy is estimated to be 3 per 1,000 population. It is observed that the incidence of new cases are higher among 30 to 50 years old (Table V). The ratio of male to female among the new cases is 1.44 : 1.
III. Deformity rate

The highest deformity is observed in the LL group of patients.

- Grade 2+ deformity in new cases: 11.2% (1989)
- Grade 2+ deformity in old cases: 28.3% (1989)

IV. Case Detection

Two methods are used for the case finding: A. Passive case finding - self referral, referral from private hospital, health clinic, Government hospital, private doctors and mobile clinic; B. Active case finding - contact survey, school survey, village survey and others.

The detection shows a declining trend over several years (Fig. I). (Detection rate/1,000 population - 0.61 (1987) and 0.44 (1988))

Table V: Number of new cases by age-groups

<table>
<thead>
<tr>
<th>Age</th>
<th>1987</th>
<th>1988</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1-9</td>
<td>118</td>
<td>60</td>
</tr>
<tr>
<td>10-19</td>
<td>369</td>
<td>258</td>
</tr>
<tr>
<td>20-29</td>
<td>458</td>
<td>376</td>
</tr>
<tr>
<td>30-39</td>
<td>556</td>
<td>387</td>
</tr>
<tr>
<td>40-49</td>
<td>546</td>
<td>386</td>
</tr>
<tr>
<td>50-59</td>
<td>442</td>
<td>392</td>
</tr>
<tr>
<td>60-69</td>
<td>252</td>
<td>205</td>
</tr>
<tr>
<td>70-79</td>
<td>96</td>
<td>91</td>
</tr>
<tr>
<td>80-89</td>
<td>8</td>
<td>21</td>
</tr>
</tbody>
</table>

Conclusion

It may say that, in Thailand, the Leprosy Control Programme has some succeeded accomplishing the object. It is ardently desired that the staffs will continue to improve the performance of the programme until the eradication goal of leprosy disease is achieved.

References


Acknowledgment

We hope that, with the observation recorded, any comments and suggestions for our future improvements in the programme is appreciatively and thankfully desired. And then, I am specially grateful to Dr. Hirata, T (National Institute for Leprosy Research, Tokyo) and also to the Government of Japan for the invitation to the efforts by Japan International cooperation Agency (JICA).
タイにおけるらいのコントロール・プログラムについて

チャリントーン・チャンタプラチューン*、キッティ・キュティアムポール
（タイ、サムトプラカーン、プラプラデーン病院—*現・国立多摩研究所研修生）

タイのらいのコントロール・プログラムについて概説した。
1. タイの地理、人口等について略説した。
2. タイにおける出生率、死亡率等、さらに医師や看護婦の数値等について記した。
3. らいは、タイにおいても保健衛生上大きな問題として考えられてきており、1953年にそのコントロール・プログラムが打ち出され、東北地方のコーン・ケア地区においてそれが試行された。その結果、WHOやUNICEFの指導の下になされた調査により、当時のらい患者数は人口1,000人当たり5人で、約14万人と推定された。
4. 1989年当時のタイにおけるらいの状況の一端は次のようになった。
   ○登録総数は、17,294人
   ○人口1,000人当たり0.31人
   ○新患者数、1249人
   ○その他
5. タイには、らいの施設として、2つの国立らい療養所、12のコロニー、22のらいセンターがあり、バンコク市内に2つの特別スキン・クリニックがある。1989年には、これらの施設における入園者は3,955名であった。
6. らい対策のために、らいに関わる職員に対する諸種のトレーニングは欠かすことのできないことであり、それには次のようなものがある。
   ○らい対策の規準作り
   ○変形の防止やリハビリテーションに関するセミナー
   ○各地域のリハビリテーション・チームのトレーニング
   ○各地域の医療関係者に対する諸種のトレーニング
7. タイにおける研究活動はラーチ・プラチャ・サマサイ研究所等を中心にされている。
8. 多剤併用療法は1984年にWHOによってタイに導入され、現在は患者のほく92%がこの方法によって治療を受けている。
9. 多剤併用療法を導入したことによって、らいのブリバレンス・レートが減少し、コントロールからはずされる患者数が増加してきている。
10. らい患者が新しく見出された場合には、その患者を中心に色々な方法によって、らいの対策が実行に移されるような仕組みが具体化されている。
11. 1953年に人口1,000人に対して5人の割合であった。そして、1989年に多剤併用療法が開始された時に0.9人であったものがその後0.31に減少してきている。