

CHAPTER 4



RESULTS AND DISCUSSION

In this study the costs for each method of case finding activity and effectiveness in term of newly cases detected are analyzed from the provider's perspective as well as patient's perspective. The results are calculated from three different endemic areas of the country. There are six townships selected from three different endemic Divisions. Yangon Division is selected as low endemic area, Sagaing Division is selected as medium endemic area, and Bago Division is selected as high endemic area. These endemic areas are selected according to the registered prevalence rate of the Divisions. We assumed that the registered prevalence rate of the Townships from the same Divisions is homogenous.

Htantabin Township as LEC township and Kawhmu Township as Routine case detection township are selected from Yangon Division. Myaung Township as LEC township and Salingyi as Routine case detection township are selected from Sagaing Division. Okpo Township as LEC township and Gyobingauk Township as Routine case detection township are selected from Bago Division. The selected six townships from three different endemic Divisions are shown in Table 4.1.

Table 4.1 The selected six Townships from three different endemic Divisions.

| Endemicity (Divisional) | Registered Prevalence rate | Divisions | Townships |
|------------------------------------|---|------------------|-------------------|
| HIGH | > 4/10,000 pop^a | BAGO | Okpo |
| | | | Gyobingauk |
| MEDIUM | 2-4/10,000 pop^a | SAGAING | Myaung |
| | | | Salingyi |
| LOW | < 2/10,000 pop^a | YANGON | Htantabin |
| | | | Kawhmu |

The selected LEC townships and Routine Case Detection townships are the geographical situation, the same health infrastructure, and same leprosy endemicity. The general characteristic of the selected townships is shown in Table 4.2.

Table 4.2 The General Characteristic of the selected six Townships.

| Townships | Popula -tion | Area Sq-km | Pop -density | Station hospit | RHC | S\C |
|---------------|-----------------|---------------|-----------------|-------------------|-----|-----|
| 1. Okpo | 121,056 | 1050.17 | 115.29 | 2 | 5 | 24 |
| 2. Gyobingauk | 117,185 | 769.2 | 152.35 | 1 | 4 | 20 |
| 3. Myaung | 104,738 | 451.1 | 232.18 | 1 | 5 | 20 |
| 4. Salingyi | 119,329 | 681.21 | 175.17 | 1 | 5 | 20 |
| 5. Htantabin | 111,120 | 647.5 | 171.61 | 2 | 4 | 26 |
| 6. Kawhmu | 117,308 | 624.1 | 187.96 | 2 | 5 | 20 |

Source : Townships Health Profile 1999.

4.1 Analyzing Costs and Effectiveness (Provider's perspective).

4.1.1 Calculation of costs for each method of case finding activities.

The total cost components of 1998 LEC Townships (Provider's Perspective) are shown in Table 4.3. Total costs for each method of case finding activities are shown in Table 4.4. The detailed calculations of total costs for case finding activities from provider's perspective are shown in appendix 3.

Table 4.3 The Cost Components of 1998 LEC Townships (Provider's Perspective).

| Activities | Cost Components | Endemicity | | |
|--------------------------------|------------------------------------|------------------|------------------|------------------|
| | | High | Medium | Low |
| 1. Capacity Building. | | Okpo | Myaung | Htantabin |
| 2. Community Participation. | A. Labor Cost. | | | |
| | 1. Initial phase. | 1,500 | 1,500 | 1,500 |
| 3. Case Detection & Treatment. | 2. Preliminary Data Collection | 36,437.5 | 36,737.5 | 45,437.5 |
| | 3. Advocacy Meeting | 13,750 | 13,750 | 13,750 |
| | 4. Meeting & Workshop | 185,850 | 110,950 | 241,350 |
| | 5. Perdiem of Team. | 54,000 | 37,500 | 94,500 |
| | 6. Perdiem of Supervisor | 27,000 | 27,000 | 27,000 |
| | 7. Transportation of Supervisors | 34,000 | 34,000 | 34,000 |
| | 8. Mobilization of Teams | 7,200 | 5,000 | 12,600 |
| | 9. Compilation of Report | 2,250 | 2,250 | 2,250 |
| | 10. Miscellaneous | 5,000 | 5,000 | 5,000 |
| | Total Labor Cost | 366,987.5 | 273,387.5 | 477,387.5 |
| | B. Material Cost. | | | |
| | 1. Health Education Material | 100,326 | 42,322 | 121,016 |
| | 2. Stationary, Equipment & Drugs | 11,400 | 11,400 | 11,400 |
| | Total Material Coat | 111,726 | 53,722 | 132,416 |
| | C. Maintenance Cost for Buildings. | 95,500 | 5,500 | 36,000 |
| | Total Provider's Cost | 574,213.5 | 332,609.5 | 645,803.5 |

Table 4.4 Total costs of LEC activity for different endemic areas.

| Endemic Area (Divisional) | TOTAL COST | | | Unit cost (person/ Kyats) |
|------------------------------|------------|-----------|------------|----------------------------------|
| | Townships | LEC | population | |
| LOW | Htantabin | 574,213.5 | 111,120 | 5.2 |
| MEDIUM | Myaung | 332,609.5 | 104,738 | 3.2 |
| HIGH | Okpo | 645,803.5 | 121,056 | 5.3 |

In Table 4.4 total LEC costs and unit cost for one person are shown. As compare the total costs, the cost of Okpo Township is high and Myaung Township has the lowest cost. The total cost of LEC depend on the total number of villages in the township and total number of LEC teams. In Okpo Township, there are 268 villages and in Myaung Township, there are 81 villages.

Table 4.5 Total costs of Routine case detection for different endemic areas.

| Endemicity (Divisional) | TOTAL COST | | | Unit cost (person/ Kyats) |
|----------------------------|--------------|-----------|------------|----------------------------------|
| | Townships | Routine | Population | |
| LOW | 1. Kawhmu | 167,775.9 | 117,308 | 1.4 |
| MEDIUM | 2. Salingyi | 159,698.3 | 119,329 | 1.3 |
| HIGH | 3.Gyobingauk | 150,088 | 117,185 | 1.3 |

In Table 4.5 the total Routine Case Detection costs and unit cost are shown. The total costs are depend on the number of health personals in the township. But when we calculate the unit cost, it is not so different. The unit costs are between 1.3 to 1.4 Kyats.

Table 4.6 Total costs of LEC activity for different endemic areas.

| Endemic Area (Divisional) | TOTAL COST | | | Unit cost Kyats |
|------------------------------|------------|-----------|----------|--------------------|
| | Townships | LEC | villages | |
| LOW | Htantabin | 574,213.5 | 223 | 2574.95 |
| MEDIUM | Myaung | 332,609.5 | 81 | 4109.29 |
| HIGH | Okpo | 645,803.5 | 268 | 2409.71 |

In Table 4.6 total LEC cost and unit cost for one village are shown. As compare the total costs, the cost of Okpo Township is high and Myaung Township has the lowest cost. When we calculate the unit cost for a village, Myaung Township is high and Okpo Township has the lowest cost.

Table 4.7 Total costs of Routine case detection for different endemic areas.

| Endemicity (Divisional) | TOTAL COST | | | Unit cost Kyats |
|----------------------------|---------------|-----------|----------|--------------------|
| | Townships | Routine | villages | |
| LOW | 1. Kawhmu | 167,775.9 | 127 | 1321.07 |
| MEDIUM | 2. Salingyi | 159,698.3 | 155 | 1030.31 |
| HIGH | 3. Gyobingauk | 150,088 | 271 | 553.83 |

In Table 4.7 total Routine Case Detection costs and unit cost for a village are shown. The total costs are depend on the number of health personals in the Township. When we calculate the unit cost for a village, Gyobingauk Township has the lowest cost and Kawhmu Township has the high cost, because Gyobingauk Township has 271 villages and Kawhmu Township has only 127 villages.

The cost components of Routine Case Detection Townships in 1998 and 1997 Townships are shown in Table 4.8 and Table 4.9. The costs are divided into (1) Labor Cost, (2) Material Cost, and (3) Maintenance Cost of the building. Most of the Health Centers are more than 30 years duration, so I use maintenance cost for the buildings.

TABLE 4.8 The Cost Components of 1998 Routine Case Detection Townships (Provider's Perspective).

| Activities | Cost Components | Endemicity | | |
|--------------------------------------|--|------------|-----------|-----------|
| | | High | Medium | Low |
| 1. Contact Examination. | A. Labor Cost. | Gyobingauk | Salingyi | Kawhmu |
| 2. School Health Examination. | 1. Contact Examination. | 2,466.3 | 2,889.9 | 2,553.6 |
| 3. Village Mass Survey. | 2. School Examination. | | | |
| | 3. Village Mass Survey. | 6,275.7 | 6,945.5 | 7,546.8 |
| | 4. Passive Case Detection. | 4,212.3 | 4,661.9 | 5,065.3 |
| | 5. Short Term Training. | 77,523.8 | 67,911 | 99,410.3 |
| | 6. Social Mobilization. | 23,400 | 26,450 | 27,125 |
| | Total Labor Cost. | 5,700 | 5,900 | 6,100 |
| | B. Material Cost. | 119,578 | 114,758.3 | 147,800.9 |
| | 1. Diagnostic Material. | | | |
| | 2. Training Material. | 360 | 315 | 550 |
| | Total Material Cost. | 7,650 | 8,625 | 8,525 |
| | | 8,010 | 8,940 | 9,075 |
| | C. Maintenance Cost for Building. | | | |
| | Total Provider's Cost. | 22,500 | 36,000 | 10,900 |
| | | 150,088 | 159,698.3 | 167,775.9 |

Table 4.9 The Cost Components of 1997 Routine Case Detection Townships (Provider's Perspective).

| Activities | Cost Components | Endemicity | | |
|-------------------------------|-----------------------------------|---------------|------------------|------------------|
| | | High Okpo | Medium Myaung | Low Htantabin |
| 1. Contact Examination. | A. Labor Cost. | | | |
| 2. School Health Examination. | 1. Contact Examination. | 2,636.3 | 2,519.4 | 2,878.5 |
| | 2. School Examination. | | | |
| 3. Village Mass Survey. | 3. Village Mass Survey. | 3,573.9 | 3,032.4 | 3,682.2 |
| | 4. Passive Case Detection. | 5,138.9 | 4,079.4 | 4,970.59 |
| | 5. Short Term Training. | 104,682.8 | 66,402.8 | 89,532 |
| | 6. Social Mobilization. | 28,025 | 22,950 | 28,025 |
| | Total Lobar Cost. | 7,100 | 6,300 | 7,500 |
| | B. Material Cost. | 151,156.8 | 105,283.9 | 136,588.3 |
| | 1. Diagnostic Material. | | | |
| | 2. Training Material. | 550 | 640 | 1500 |
| | Total Material Cost. | 8,775 | 7,525 | 8,200 |
| | | 9,325 | 8,165 | 9,700 |
| | C. Maintenance Cost for Building. | | | |
| | Total Provider's Cost. | 72,000 | 7,500 | 59,500 |
| | | 232,481.8 | 120,948.9 | 205,788.3 |

The consumer price index of 1998 is 1.12 based on 1997 prices. It means that 1998 living cost was 12% higher than living cost of 1997. So we have to adjust the 1997 Routine Case Detection costs to 1998. The adjusted costs are shown in Table 4.10.

Total costs for each method of case finding activities of same Townships in different years are shown in Table 4.10 and 4.11. The detailed calculation of total costs for case finding activities from provider's perspective is shown in Appendix C.

Table 4.10 Total costs of case finding activity for same Townships in different years.

| Endemicity (Divisional) | TOTAL COST | | | Unit cost (Person/ Kyats) |
|----------------------------|------------|-----------------|------------|------------------------------------|
| | Townships | 1997 Routine | Population | |
| LOW | Htantabin | 205,788.3 | 111,120 | 1.8 |
| MEDIUM | Myaing | 120,948.9 | 104,738 | 1.2 |
| HIGH | Okpo | 232,481.8 | 121,056 | 1.9 |

The total cost of 1997 Routine Case Detection cost unit cost for one person is shown in Table 4.10. The total cost of Myaung Township is low as compare with other township. The reason is, in Myaung Township, there are only three medical officers and 28 midwives. The health personals in Myaung Township are lower than other township.

Table 4.11 The Adjusted Cost of 1997 Routine Case Detection Townships

| Endemicity (Divisional) | TOTAL COST | | | Unit cost (Person/ Kyats) |
|----------------------------|------------|-----------------------------|------------|------------------------------------|
| | Townships | 1998 adjusted Routine | Population | |
| LOW | Htantabin | 230482.9 | 111,120 | 2.1 |
| MEDIUM | Myaing | 135462.8 | 104,738 | 1.3 |
| HIGH | Okpo | 260378.7 | 121,056 | 2.3 |

We have to compare the 1997 Routine Case Detection activities and 1998 LEC activities in the same township. So we have to adjust the 1997 cost to 1998 cost. The price index of 1997 to 1998 is 1.12. The adjusted 1998 costs are shown in Table 4.11.

Effectiveness in term of newly detected cases of case finding activities are shown in Table 4.12.

Table 4.12 Newly detected cases of case finding activities in different endemic areas.

| Endemicity (Divisional) | Newly Detected Cases 1998 | | | |
|----------------------------|---------------------------|-----|------------|---------|
| | Townships | LEC | Townships | Routine |
| LOW | Htantabin | 63 | Kawhmu | 11 |
| MEDIUM | Myaung | 119 | Salingyi | 25 |
| HIGH | Okpo | 168 | Gyobingauk | 18 |

In Table 4.12 newly detected cases of LEC and Routine Case Detection is shown. When we compare the LEC and Routine, LEC activities are 5 to 9 times higher than Routine Case Detection activities.

Newly Detected Cases of same townships from different case finding activities in different years are shown in Table 4.13.

Table 4.13 Newly Detected Case of same Townships from different case finding activities in different tears.

| Endemicity (Divisional) | Newly Detected Cases | | |
|----------------------------|----------------------|---------|------|
| | Townships | 1997 | 1998 |
| | | ROUTINE | LEC |
| LOW | Htantabin | 12 | 69 |
| MEDIUM | Myaung | 29 | 119 |
| HIGH | Okpo | 27 | 168 |

Source : Annual Report of National Leprosy Elimination Program of Myanmar.

In Table 4.13 newly detected cases of different case finding activities of same townships are shown. LEC activities are also 4 to 6 times higher than Routine Case Detection activities. We have to know whether the newly detected cases are associated to the endemicity of the areas or not. X^2 test was done.

| Endemicity | LEC | Routine |
|------------|-----|---------|
| High | 168 | 27 |
| Medium | 119 | 29 |
| Low | 63 | 12 |

$$X^2 = \sum_{I=1}^N \frac{(O - E)^2}{E}$$

H_0 = LEC case detection is not associated with endemicity of Leprosy areas.

H_A = LEC Case detection is associated with endemicity of Leprosy areas.

$$X^2 = 0.53$$

So we can not reject the null hypothesis. Therefore LEC case detection is not associated with endemicity of Leprosy areas.

4.2 Analyzing cost-effectiveness of case finding activities (Provider's perspective)

The cost-effectiveness of 1998 LEC Townships from different endemic areas are shown in Table 4.14.

Table 4.14 Cost-effectiveness of 1998 LEC Townships from different endemic areas.

| Endemicity (Divisional) | TOTAL COST | | Newly Cases Detected | Cost- effectiveness Ratio | US\$ |
|----------------------------|------------|-------------|----------------------------|---------------------------------|------|
| | Townships | 1998 LEC | | | |
| LOW | Htantabin | 574,213.5 | 63 | 9,114.5 | 57 |
| MEDIUM | Myaing | 332,609.5 | 119 | 2,795 | 17.5 |
| HIGH | Okpo | 645,803.5 | 168 | 3,844 | 24 |

When we compare the cost-effectiveness ratio of Townships in different endemic areas, Myaung Township the cost-effectiveness ratio is lowest among them. It depend on the total number of newly detected cases. We already proved that LEC newly detected cases are not associated with the endemicity of areas. The total cost of Myaung LEC is lower, but effectiveness in term of newly detected cases are high. So this is the reason for Myaung C/E ratio is lowest among them.

The cost-effectiveness of Routine Case Detection Townships from different endemic areas is shown in Table 4.15.

Table 4.15 Cost-effectiveness of 1998 Routine Case Detection Townships from different endemic areas.

| Endemicity (Divisional) | TOTAL COST | | Newly Cases Detected | Cost- effectiveness Ratio | US\$ |
|----------------------------|------------|-----------------|----------------------------|---------------------------------|------|
| | Townships | 1998 Routine | | | |
| LOW | Kawhmu | 167,775.9 | 11 | 15,240.9 | 95.3 |
| MEDIUM | Salingyi | 159,698.3 | 25 | 6,391.9 | 39.9 |
| HIGH | Gyobingauk | 150,088 | 18 | 8,338.2 | 52.1 |

When we compare the C/E ratio of LEC and Routine Case Detection activities, the C/E ratio of LEC are 1.6 to 2.3 times lower than the C/E Ratio of Routine Case Detection activities. Even the total cost of LEC are higher than Routine activities, the newly detected cases are 5 to 9 times higher the Routine. So the C/E ratio is lower than the Routine Case Detection activities.

The cost-effectiveness of 1997 Routine case detection townships is shown in Table 4.16. These townships are the same with 1998 LEC townships.

Table 4.16 Cost-effectiveness of 1997 Routine Case Detection Townships.

| Endemicity (Divisional) | TOTAL COST | | Newly Cases Detected | Cost-effectiveness Ratio | |
|----------------------------|------------|-----------------------------|----------------------------|-----------------------------|------|
| | Townships | 1998 adjusted Routine | | KYATS | US\$ |
| LOW | Htantabin | 230,482.9 | 12 | 19,206.7 | 120 |
| MEDIUM | Myaung | 135,462.8 | 29 | 4,671.1 | 29.2 |
| HIGH | Okpo | 260,378.7 | 27 | 9,643.7 | 60.3 |

The C/E ratio of Myaung Township (Medium endemic area) is lowest among them. This is because, the total cost of Routine Case Detection of Myaung Township is lowest, but the effectiveness in term of newly detected cases is highest among them.

Additional Cost-Effectiveness Analysis of LEC Townships.

Assumption: We assume that Routine Case Detection activity will implement in LEC Township and newly detected cases are the same with the previous year newly detected cases.

To know the effectiveness of LEC, we have to do additional analysis. It is shown in Table 4.17.

Table 4.17 Additional Cost-Effectiveness Analysis of Case Finding Activities.

| Okpo | LEC (A) | Routine (B) | Additional A - B |
|----------------------|-----------------|-------------------|---------------------|
| Newly detected cases | 168 | 27 | 141 |
| Costs | 645,803.5 | 260,378.7 | 385,424.8 |
| Cost-Effectiveness | 3844 (24 \$) | 9,643.7 (60.3 \$) | 2733.5 (17.08 \$) |
| Myaung | LEC (A) | Routine (B) | Additional A - B |
| Newly detected cases | 119 | 29 | 90 |
| Costs | 332,609.5 | 135,642.8 | 197,146.7 |
| Cost-Effectiveness | 2,795 (17.5 \$) | 4,671.1 (29.2 \$) | 2,190.5 (13.69 \$) |
| Htantabin | LEC (A) | Routine (B) | Additional A - B |
| Newly detected cases | 63 | 12 | 51 |
| Costs | 574,213.5 | 230,482.9 | 343,730.6 |
| Cost-Effectiveness | 9,114.5 (57 \$) | 19,206.7 (120 \$) | 6,737.8 (42.12 \$) |

Conversion Rate: US 1\$ = 160 KYATS

The results in high endemic area, additional cost-effectiveness ratio is 17.08 \$, in medium endemic area, additional cost-effectiveness ratio is 13.69\$, and in low endemic area, additional cost-effectiveness ratio is 42.12\$. It means that, in high endemic area, if the program want to detect additional new case, the program has to pay 17.08\$ more. In medium endemic area, 13.69\$ and in low endemic area, 42.12\$ should be paid by the program.

Assumption: We assume that the population of the two Townships, in which two case finding activities is implemented, is the same 100,000 population.

The cost-effectiveness analysis of the two case finding activities in the same disease endemic area is shown in Table 4.18.

Table 4.18 The Cost-effectiveness Analysis of The Two Case Finding Activities in Low Endemic Area.

| Variable | Routine Case Detection Kawhmu | LEC Htantabin |
|---|--|-------------------------------------|
| Effectiveness | | |
| Population | 117,308 | 111,120 |
| Newly cases detected | 11 | 63 |
| Expected number of new cases detected if population are 100,000 in both areas | $(100,000 * 11) / 104738 =$ 9.37 | $(100,000 * 63) / 111120 =$ 56.7 |
| Costs(Kyats) | | |
| Unit cost per person | 1.4 kyats | 5.2 Kyats |
| Total costs | 140,000 | 520,000 |
| Cost-effectiveness ratio | | |
| Average cost per newly cases detected | 14,941.3 | 9,171 |
| In US\$ | 93.4 US \$ | 57.3 US \$ |

The cost-effectiveness analysis of the two case finding activities in the same disease endemic area is shown in Table 4.19.

Table 4.19 The Cost-effectiveness Analysis of The Two Case Finding Activities in Medium Endemic Area.

| Variable | Routine Case Detection Salingyi | LEC Myaung |
|---|--|------------------------------------|
| Effectiveness | | |
| Population | 119,329 | 104,738 |
| Newly cases detected | 25 | 119 |
| Expected number of new cases detected if population are 100,000 in both areas | $(100,000 * 25) / 119329 = 20.95$ | $(100,000 * 119) / 104738 = 113.6$ |
| Costs(Kyats) | | |
| Unit cost per person | 1.04 kyats | 3.12Kyats |
| Total costs | 104,000 | 312,000 |
| Cost-effectiveness ratio | | |
| Average cost per newly cases detected | 4,964.2 | 2,746.5 |
| In US\$ | 31 US \$ | 17.16 US \$ |

The cost-effectiveness analysis of the two case finding activities in the same disease endemic area is shown in Table 4.20.

Table 4.20. The Cost-effectiveness Analysis of The Two Case Finding Activities in High Endemic Area.

| Variable | Routine Case Detection Gyobingauk | LEC Okpo |
|---|--|------------------------------------|
| Effectiveness | | |
| Population | 117,185 | 121,056 |
| Newly cases detected | 18 | 168 |
| Expected number of new cases detected if population are 100,000 in both areas | $(100,000 * 18) / 117185 = 15.36$ | $(100,000 * 168) / 121056 = 138.7$ |
| Costs(Kyats) | | |
| Unit cost per person | 1.09 kyats | 5.03Kyats |
| Total costs | 109,000 | 503,000 |
| Cost-effectiveness ratio | | |
| Average cost per newly cases detected | 7,096.35 | 3,526.5 |
| In US\$ | 44.3 US \$ | 22.7 US \$ |

In Table 4.18 to 4.20, the results are shown, if the township population is the same, 100,000 population and expected number of newly detected cases and C/E Ratio are calculated. In this case, the result of high and low areas are not changed significantly, but in medium endemic area, the C/E Ratio of LEC is 2.3 times lower than Routine previously, now it is only 1.2 times lower than the C/E Ratio of Routine Case Detection.

Cost-Effectiveness Analysis of Case Finding Activities from Provider's Perspective.

In this study, costs of each method of case finding activities are calculated from the provider's perspective as well as patient's perspective. The study subjects in both townships are comparable in term of disease endemicity, geographical situation, and health infrastructure. For LEC townships, Htantabin, Myaung and Okpo townships are

selected. Kawhmu, Salingyi and Gyobingauk townships are selected as 1998 Routine case detection townships.

The total cost of LEC and Routine case detection from the provider's perspective in low, medium and high endemic areas of the country are shown in Table 4.6.A and Table 4.6.B. The total cost of Routine case detection activities are lower than the total cost of LEC activities in all different all endemic areas. When we compare the unit cost of Routine case detection activities in different endemic areas, low endemic area is higher cost than high endemic area.

The reason is that, in high endemic area many cases stayed in that area and so the cases are detected easily by doing routine case detection. But in low endemic area, even if the program find the cases actively, the cases are not as many as are found in high endemic area, because many cases did not stayed in that area.

The total cost of LEC and Routine case detection from provider's perspective in same townships in different years are shown in Table 4.4.A and Table 4.4.B. The total costs of LEC are higher than in total cost of routine case detection activity. In Table 4.7 and Table 4.8 effectiveness in term of newly cases detected are shown in different endemic areas.

According to the data, newly case detected from LEC activity is 5 to 9 times higher than routine case detection activity. It indicates that LEC successfully detected a large number of cases within a relatively short period of time and increased awareness of the disease in the community. Apart from detection cases, these campaigns have been successful in promoting community awareness, reducing stigma and improving the accessibility of multi-drug therapy (MDT) and skills of general health workers for diagnosis and treatment.

When we analyze the newly detected cases of Routine case detection and LEC from different townships, the following results are obtained.

Table 4.21 Newly Detected Cases of Case Finding Activities from Different Townships.

| Townships | Activity | Detected cases | MB % | Child % |
|------------|----------|----------------|------|---------|
| Okpo | LEC | 168 | 40% | 7.14% |
| Gyobingauk | Routine | 18 | 67% | 5.56% |
| Myaung | LEC | 119 | 34% | 10.08% |
| Salingyi | Routine | 25 | 64% | 12% |
| Htantabin | LEC | 63 | 44% | 2% |
| Kawhmu | Routine | 11 | 100% | 0% |

Table 4.22 Newly Detected Cases of Different Case Finding Activities from Same Townships.

| Townships | 1997 year | Detected cases | MB% | Child% |
|-----------|------------------------|----------------|-----|--------|
| Okpo | Routine Case detection | 27 | 48% | 0% |
| Myaung | | 29 | 31% | 0% |
| Htantabin | | 12 | 75% | 0% |

According to the Table 4.21 and Table 4.22, there are high proportions of MB and child cases among the newly detected cases especially LEC activity. It means that there

are many hidden cases in those areas and also there is also disease transmission in those areas. So LEC can detect many backlogs (hidden) cases in different endemic areas. In Table 4.13, 4.14, 4.15 the cost-effectiveness analysis are done by expected number of new cases detected. In this analysis, we assume that populations in both areas are 100,000. In this study, every endemic area LEC activities are more cost-effectiveness than Routine Case Detection activities. When we compare average cost per expected detected case among different endemic areas, high endemic area is low average cost than low endemic area.

4.3 Analyzing Costs and Effectiveness (Patient's Perspective).

4.3.1 Calculation of costs for each method of case finding activities.

Total costs for each method of case finding activities are shown in Table 4.23. The detailed calculation of total costs for case finding activities from patient's perspective is shown in Appendix 4.

Table 4.23 Total costs of different case finding activities from different endemic areas.

| Endemicit (Divisional) | TOTAL COSTS | | | |
|---------------------------|-------------|-------|------------|---------|
| | Townships | LEC | Townships | Routine |
| LOW | Htantabin | 22050 | Kawhmu | 5900 |
| MEDIUM | Myaung | 41450 | Salingyi | 13000 |
| HIGH | Okpo | 58650 | Gyobingauk | 9450 |

Total costs of different case finding activities of the same townships from different years are shown in Table 4.23. The detailed calculation of total cost for case finding activities from patient's perspective is shown in Appendix D.

Table 4.24 Total costs of case finding activities of the same townships from different years.

| Endemicity (Divisional) | Townships | TOTAL COST | |
|----------------------------|-----------|--------------|----------|
| | | 1997 Routine | 1998 LEC |
| LOW | Htantabin | 7,146.3 | 22,050 |
| MEDIUM | Myaung | 17,313.8 | 41,450 |
| HIGH | Okpo | 16,209.9 | 58,650 |

4.3.2 Analyzing cost-effectiveness of Case finding Activities (Patient's perspective).

The cost-effectiveness of different case finding activities from different endemic areas is shown in Table 4.25.

Table 4.25 Cost-Effectiveness of Case Finding Activities.

| Endemicity | activity | townships | cost | case | C/e K | \$ |
|------------|----------|------------|--------|------|-------|-------|
| HIGH | LEC | Okpo | 58,650 | 168 | 349.1 | 2.182 |
| | Routine | Gyobingauk | 9,450 | 18 | 525 | 3.281 |
| MEDIUM | LEC | Myaung | 41,450 | 119 | 348.3 | 2.177 |
| | Routine | Salingyi | 13,000 | 25 | 520 | 3.25 |
| LOW | LEC | Htantabin | 22,050 | 63 | 350 | 2.188 |
| | Routine | Kawhmu | 5,900 | 11 | 536.4 | 3.352 |

The cost-effectiveness analysis of case finding activities of same townships from different years is shown in Table 4.26.

Table 4.26 Cost-Effectiveness Analysis of Case Finding Activities of Same Townships ^{from} different years.

| Endemicity | Townships | activity | Total Cost | Case | C/E K | \$ |
|------------|-----------|----------|------------|------|-------|-------|
| HIGH | Okpo | Routine | 13,950 | 27 | 516.6 | 3.229 |
| | | LEC | 58,650 | 168 | 349.1 | 2.182 |
| MEDIUM | Myaung | Routine | 14,900 | 29 | 513.8 | 3.211 |
| | | LEC | 41,450 | 119 | 348.3 | 2.177 |
| LOW | Htantabin | Routine | 6,150 | 12 | 512.5 | 3.203 |
| | | LEC | 22,050 | 63 | 350 | 2.188 |

Conversion rate: US 1 \$ = 160 KYATS.

Cost-effectiveness Analysis of Case Finding Activities from Patient's Perspective.

When we compare the total costs of Routine case detection activities and LEC activities, the total cost of Routine case detection activities is 5 to 9 times lower than LEC activities. It is shown in Table 4.14. The cost-effectiveness analysis of Routine case detection and LEC activities from patient's perspective is shown in Table 4.17. LEC activities are more cost effective than Routine case detection activities from patient's perspective also. When we compare the cost-effectiveness from patient's perspective among endemic area, low endemic area is higher cost than high endemic area. In Table 4.18 the cost-effectiveness analysis of Routine case detection and LEC activities of same townships are shown. LEC activities are more cost-effectiveness than Routine case detection also.

4.4 SENSITIVITY ANALYSIS OF LEC ACTIVITY.

Now LEC activity has done 50% visiting villages and 50% drainage villages in one township. If we expend the visiting villages coverage up to 75%, and 100%, what will happen in Total cost and cost-effectiveness ratio? The Cost-Effectiveness Ratio of LEC townships, according to the coverage are shown in Table4.27. Detailed cost calculation is shown in Appendix E.

Table 4.27 Sensitivity Analysis of LEC Townships.

| Sr. No | Visiting Villages Coverage | Cost-Effectiveness Ratio | | |
|-----------|---------------------------------|--------------------------|--------|-----------|
| | | Okpo | Myaung | Htantabin |
| 1. | 25% Visiting Villages Coverage | 19.7 | 14.7 | 42.6 |
| 2. | 50% Visiting Villages Coverage | 24 | 17.5 | 57 |
| 3. | 75% Visiting Villages Coverage | 27.7 | 17.8 | 63 |
| 4. | 100% Visiting Villages Coverage | 30.6 | 19.3 | 69.8 |

SENSITIVITY ANALYSIS.

Now LEC activity has done 50% visiting villages and 50% drainage villages in one township. If we expend the visiting villages coverage up to 75%, and 100%, the total cost and cost-effectiveness ratio will be shown in Table 4.21. If we expend the visiting villages from 50% to 75% visiting villages coverage, in low endemic area, like Htantabin township 15.5 US\$ per detected case is needed. In high endemic area like Okpo township to expend the 75% coverage, 5 US\$ is needed. If we expend from 75% to 100%, for Htantabin township 6.8 US\$ is needed, but for Okpo township, only 2.9 US\$ per detected case is needed. For Myaung township, if we expend visiting villages coverage from 50% to 75%, 0.3 US \$ per detected case is needed, from 75% to 100% coverage, 1.5 US\$ per detected case is needed.

The cost components of sensitivity analysis of 1998 LEC Townships are shown in Table 4.28, 4.29, and 4.30.

Table 4.28 The Cost Components of 25% visiting villages (Provider's Perspective).

| Activities | Cost Components | Endemicity | | |
|--------------------------------|------------------------------------|------------|----------|-----------|
| | | High | Medium | Low |
| 1. Capacity Building. | | Okpo | Myaung | Htantabin |
| 2. Community Participation. | A. Labor Cost. | | | |
| | 1. Initial phase. | 1500 | 1500 | 1500 |
| 3. Case Detection & Treatment. | 2. Preliminary Data Collection | 45437.5 | 27437.5 | 13937.5 |
| | 3. Advocacy Meeting | 13750 | 13750 | 13750 |
| | 4. Meeting & Workshop | 211850 | 96450 | 177850 |
| | 5. Perdiem of Team. | 50250 | 15750 | 42000 |
| | 6. Perdiem of Supervisor | 27000 | 27000 | 27000 |
| | 7. Transportation of Supervisors | 34000 | 34000 | 34000 |
| | 8. Mobilization of Teams | 6700 | 2100 | 5600 |
| | 9. Compilation of Report | 2250 | 2250 | 2250 |
| | 10. Miscellaneous | 5000 | 5000 | 5000 |
| | Total Labor Cost | 397737.5 | 225237.5 | 322887.5 |
| | B. Material Cost. | | | |
| | 1. Health Education Material | 121016 | 44522 | 95926 |
| | 2. Stationary, Equipment & Drugs | 11400 | 10800 | 10800 |
| | Total Material Coat | 132416 | 55322 | 106726 |
| | C. Maintenance Cost for Buildings. | 95500 | 5500 | 36000 |
| | Total Provider's Cost | 625653.5 | 286059.5 | 465613.5 |

Table 4.29. The Cost Components of 75% visiting villages (Provider's Perspective).

| Activities | Cost Components | Endemicity | | |
|--------------------------------|------------------------------------|------------|----------|-----------|
| | | High | Medium | Low |
| 1. Capacity Building. | | Okpo | Myaung | Htantabin |
| 2. Community Participation. | A. Labor Cost. | | | |
| | 1. Initial phase. | 1500 | 1500 | 1500 |
| 3. Case Detection & Treatment. | 2. Preliminary Data Collection | 67937.5 | 27437.5 | 54437.5 |
| | 3. Advocacy Meeting | 13750 | 13750 | 13750 |
| | 4. Meeting & Workshop | 278850 | 115950 | 233350 |
| | 5. Perdiem of Team. | 150750 | 45000 | 125250 |
| | 6. Perdiem of Supervisor | 27000 | 27000 | 27000 |
| | 7. Transportation of Supervisors | 34000 | 34000 | 34000 |
| | 8. Mobilization of Teams | 20100 | 6000 | 16700 |
| | 9. Compilation of Report | 2250 | 2250 | 2250 |
| | 10. Miscellaneous | 5000 | 5000 | 5000 |
| | Total Labor Cost | 601137.5 | 277887.5 | 513237.5 |
| | B. Material Cost. | | | |
| | 1. Health Education Material | 132016 | 44522 | 119126 |
| | 2. Stationary, Equipment & Drugs | 13500 | 10800 | 12600 |
| | Total Material Coat | 145516 | 55322 | 121726 |
| | C. Maintenance Cost for Buildings. | 95500 | 5500 | 36000 |
| | Total Provider's Cost | 842153.5 | 338709.5 | 670963.5 |

Table 4.30 The Cost Components of 100% visiting villages

| Activities | Cost Components | Endemicity | | |
|--------------------------------|------------------------------------|------------|----------|-----------|
| | | High | Medium | Low |
| 1. Capacity Building. | | Okpo | Myaung | Htantabin |
| 2. Community Participation. | A. Labor Cost. | | | |
| | 1. Initial phase. | 1500 | 1500 | 1500 |
| 3. Case Detection & Treatment. | 2. Preliminary Data Collection | 58937.5 | 27437.5 | 49937.5 |
| | 3. Advocacy Meeting | 13750 | 13750 | 13750 |
| | 4. Meeting & Workshop | 312350 | 126450 | 261350 |
| | 5. Perdiem of Team. | 201000 | 60750 | 167250 |
| | 6. Perdiem of Supervisor | 27000 | 27000 | 27000 |
| | 7. Transportation of Supervisors | 34000 | 34000 | 34000 |
| | 8. Mobilization of Teams | 26800 | 8100 | 22300 |
| | 9. Compilation of Report | 2250 | 2250 | 2250 |
| | 10. Miscellaneous | 5000 | 5000 | 5000 |
| | Total Labor Cost | 682587.5 | 306237.5 | 584337.5 |
| | B. Material Cost. | | | |
| | 1 Health Education Material | 128016 | 44522 | 106926 |
| | 3. Stationary, Equipment & Drugs | 12900 | 10800 | 12300 |
| | Total Material Coat | 140916 | 55322 | 119226 |
| | C. Maintenance Cost for Buildings. | 95500 | 5500 | 36000 |
| | Total Provider's Cost | 919003.5 | 367059.5 | 739563. |

4.5 Correlation between MDT Coverage and Leprosy Registered Prevalence Rate.

The MDT coverage and Registered Prevalence rate from 1990 to 1998 are shown in Table 4.31.

Table 4.31 The MDT Coverage and Registered Prevalence Rate of Leprosy.

| Year | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 |
|-----------------------|------|------|------|------|------|-----|-----|-----|-----|
| MDT | 22.1 | 59 | 55.2 | 56.1 | 70.1 | 100 | 100 | 100 | 100 |
| Registered Prevalence | 27.6 | 19.3 | 13.5 | 9 | 6.1 | 4.7 | 4.1 | 2.9 | 2.5 |

The simple correlation between MDT coverage and Leprosy Registered Prevalence Rate are calculated. The results are the following.

$$\text{Simple Correlation Coefficient} = -0.9070$$

$$\text{T - statistic} = 7.9739$$

$$\text{Probability} = 0.0001$$

So it means that MDT coverage and Registered Prevalence Rate are negative correlation and statistically significant. If the MDT coverage increase, the Registered Prevalence Rate will be decreased.