Economic Burden in Management of Acute Lower Respiratory Infection, Patients' Perspective : A Case Study of Takhli District Hospital

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Abstract

A cross-sectional descriptive study to determine the economic burden in management of acute lower respiratory infection from the patient's perspective was conducted at Takhli District Hospital from March 2000 to February 2001. Information obtained from interviewing caretakers of 165 children with LRI and data collected from medical records revealed the cost per case ranged from 140 to 6,471 baht with an average total cost per case of 1248 baht. The main determinants of the average total cost per case included the diagnosis of diseases, type of patient (outpatient or inpatient), wheezing association and respiratory syncytial virus positivity. Children with severe pneumonia accounted for the highest in the average total cost per case (2,348 baht) while those with bronchitis accounted for the lowest (924 baht). The average total cost per case of inpatients was 3.5 times higher than that of outpatients. Health policy efforts to improve the effectiveness of care in an ambulatory setting may reduce the financial cost of the illness.

Key word : Economic Burden, Acute Lower Respiratory Tract Infection

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In Thailand, acute respiratory infection (ARI) particularly lower respiratory infection (LRI) accounts for approximately 25 per cent of all deaths among children under one year of age. The mortality rate from pneumonia is ranked among the top 5 causes of death in children under one year of age[1].

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Besides pneumonia, there is a wide range of the spectrum of diseases such as croup, bronchitis, acute bronchiolitis which bring the children to hospitals especially children under 5 years of age. These cases accounted for a large amount of expenses each year (2). Little is known about the economic burden of LRI on households and on the governmental sector in Thailand. Information of this burden together with the prevalence/incidence of this disease would be helpful for policy makers to either effectively allocate budget or find out appropriate methods to reduce the expense in the future.

Objectives

The general objectives of this study were to identify the economic burden in diagnosis and treatment of LRI in children under 5 years old from the perspective of patients. The additional specific objectives included:

1. To determine the burden of each type of expense in diagnosis and treatment of acute LRI.
2. To determine the expenses in diagnosis and treatment of acute LRI in specific clinical diagnosis e.g. croup, bronchitis, bronchiolitis, pneumonia, severe pneumonis.
3. To determine the expense in diagnosis and treatment of acute LRI both in the outpatient department (OPD) and inpatient department (IPD) settings.
4. To determine the expense in diagnosis and treatment of acute LRI both with and without wheezing.

METHOD

Study design

A cross-sectional descriptive study was conducted as part of a population-based study of epidemiology of respiratory syncytial virus (RSV)-LRI from March 2000 to February 2001.

Study samples

The primary caretakers of children under 5 years old, who suffered from acute LRI and received medical care at Takhli District Hospital, were enrolled in the study. Additionally, other secondary caretakers were also interviewed to complete the information on household characteristics and expenditures.

Data on the expenses of diagnosis and treatment (direct medical cost such as room, charge, doctor's fee, costs of medications, investigation and minor operation) and direct non-medical cost (traveling, food, and lodging) were collected by interviewing the caretakers. Moreover, indirect cost of absence from work or decreased income was also calculated. Data on clinical details of the patients e.g. diagnosis, wheezing-association, RSV positivity etc. were obtained from the medical records.

Criteria for diagnosis and treatment of children with LRI was based upon the national guideline for the management of acute respiratory infections in children(3) including 2 categories; first, diseases treated as OPD cases were mild croup, acute bronchitis and pneumonia; and second, diseases treated as IPD cases were severe croup, acute bronchiolitis and severe pneumonia. Some patients with acute bronchitis or pneumonia with wheezing were hospitalized if they needed some special care such as chest physical therapy for retained secretion problems or inhalation therapy.

The expense of direct medical cost in the present study was the total hospital cost charged to the patient regardless of who the main payer was.

Statistical analysis

Descriptive statistics was used in this study. The arithmetic mean was used as an average cost of each item.

RESULTS

All of the 165 primary caretakers of the children with LRI were interviewed. Most of the caretakers (67.9%) were their mothers. In addition to the primary caretakers, the other 55 secondary caretakers were also interviewed to complete the information on household characteristics and expenditures as shown in Table 1. The average household income was 56,933 baht annually excluding 10 households with no income.

Diagnosed LRI in this study included bronchitis (49.1%), pneumonia (28.5%), severe pneumonia (14.5%), croup (5.5%) and acute bronchiolitis (2.4%).

Sixty per cent of cases were hospitalized due to either retained secretion or persistent wheezing which required close monitoring by medical staff. Of these, 24 cases (51.1%) had pneumonia and 39 cases (48.1%) had bronchitis as shown in Table 2. Wheezing was commonly founded among children with LRI (as high as 67.3%).

The average total cost per case was 1,248 baht. Of this, the average total cost for severe pneumonia was the highest equal to 2,348 baht while that

Table 1. General characteristics of 165 primary and 55 secondary caretakers.

Characteristics	Primary caretaker		Secondary caretaker	
	Number	%	Number	%
Relationship to children				
Father	26	15.8	5	9.1
Mother	112	67.9	30	54.5
Relatives	27	16.4	20	36.4
Gender of caretaker				
Male	25	15.2	9	16.4
Female	140	84.8	46	83.6
Occupation				
Unemployed/housewife	98	59.4	29	52.7
Laborer	47	28.5	21	38.2
Business person	7	4.2	3	5.4
Agriculture	9	5.5	0	0
Others	4	2.4	2	3.6
Salary per month (baht)				
No income	98	59.4	29	52.7
≤ 2,500	17	10.3	3	5.5
2,501-10,000	42	25.5	21	38.1
5,001-10,000	6	3.6	1	1.8
10,000+	2	1.2	1	1.8

Table 2. Diagnosis of children with LRI according to the type of patient.

Diagnosis	Number	Outpatient		Inpatient	
		n	%	n	%
Pneumonia	47	23	48.9	24	51.1
Severe pneumonia	24	0		24	100
Bronchitis	81	42	51.9	39	48.1
Bronchiolitis	4	0		4	100
Croup	9	1	11.1	8	88.9
Total	165	66	40	99	60

of bronchitis was the lowest, equal to 924 baht as shown in Table 3.

The average total cost per case for inpatients was 3.5 times higher than the outpatients (1,744 baht *vs* 504 baht, respectively). The average direct medical cost per case was the highest (806 baht) when compared to direct non-medical cost (279 baht) and indirect cost (163 baht) as shown in Table 4. None had to pay lodging expenses.

Wheezing-associated with LRI was very common in this study which may need more specific treatment such as rapid acting brochodilators. The average expenses per case of those with and without wheezing were 1,394 and 947 baht, respectively. The major difference of the average total cost per case between the two groups was the direct cost as shown in Table 5.

All direct non-medical costs and indirect costs were directly paid by the family household. In contrast, the majority (87.9%) of direct medical costs was paid by the governmental fund for the poor.

DISCUSSION

The average total cost per case of in the present study was 1248 baht, ranging from 140 to 6,471 baht (SD = 999). The main determinants on the total cost per case were the diagnosis of disease, type of patients (outpatient or inpatient) and wheezing-association. Whatever the determinants considera tion, the direct medical cost accounted for the largest proportion of the average total cost per case. As the average household income per year was 56,933 baht, the average total cost per case (1,248 baht) accounted for 2.19 per cent. Of this, the average total

Table 3. The average expense per case (baht) according to the diagnosis.

Type of expense	Pneumonia	Severe pneumonia	Bronchitis	Bronchiolitis	Croup
Direct cost	1,092	2,114	778	977	1,117
Direct medical cost	801	1,725	538	697	831
Direct non-medical cost	291	389	239	280	286
Indirect cost	170	234	145	113	111
Total cost	1,262	2,348	923	1,090	1,228

Table 4. The type of expenses per case (baht) of 165 cases according to the type of patient.

Type of expenses	Outpatient (n = 66)	Inpatient (n = 99)	Average expenses per case
Direct cost	431	1,521	1,085
Direct medical cost	312	1,134	806
Direct non-medical cost	118	387	279
Indirect cost	73	222	163
Total cost	504	1,743	1,248

Table 5. The average expense per case (baht) of 165 cases according to wheezing status.

Type of expense	Wheezing status		Average expense per case
	No wheezing (n = 54)	Wheezing (n = 111)	
Direct cost	828	1,210	1,085
Direct medical cost	622	895	806
Direct non-medical cost	206	315	279
Indirect cost	119	184	163
Total cost	947	1,394	1,248

cost per case which the households had to pay by themselves (direct non-medical cost and indirect cost) accounted for 0.78 per cent of the annual income for each household.

Because the average total cost per case for IPD cases was 3.5 times higher than that for OPD cases, future health policy efforts to improve the effectiveness of primary care interventions for LRI in the ambulatory setting may reduce the total expense of this illness. The improvement of ability for diagnosis and treatment of mild LRI should be promoted at subdistrict health centers in order to reduce the expenditure directly paid by patients (direct non-medical cost and indirect cost). Measures for effective prevention and treatment of wheezing-associated LRI should be urgently taken and introduced to the public health programs as well as the prevention of RSV infection.

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ค่าใช้จ่ายในการดูแลรักษาผู้ป่วยโรคติดเชื้อทางเดินหายใจส่วนล่างในเด็กอายุต่ำกว่า 5 ปี ในมุมมองของผู้รับบริการ : กรณีศึกษาในโรงพยาบาลชุมชนตาคลี

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การศึกษาถึงค่าใช้จ่ายที่เกิดจากการป่วยด้วยโรคติดเชื้อทางเดินหายใจส่วนล่างทั้งผู้ป่วยในและผู้ป่วยนอกในเด็กอายุต่ำกว่า 5 ปีในทัศนะของผู้รับบริการ ได้ดำเนินการที่โรงพยาบาลชุมชนตาคลี จังหวัดนครสวรรค์ ระหว่างเดือนมีนาคม 2543 ถึงเดือนกุมภาพันธ์ 2544 โดยการสัมภาษณ์ผู้ดูแลเด็กป่วยและรวบรวมข้อมูลด้านการเจ็บป่วยจากแฟ้มประวัติผู้ป่วย พบว่าค่าใช้จ่ายทั้งหมดของผู้ป่วย (ค่าใช้จ่ายทางตรงที่เกี่ยวกับแพทย์ ค่าใช้จ่ายทางตรงที่ไม่เกี่ยวกับแพทย์ และค่าใช้จ่ายทางอ้อม) มีค่าอยู่ระหว่าง 140 ถึง 6,471 บาท โดยมีค่าเฉลี่ยของค่าใช้จ่ายทั้งหมดเท่ากับ 1,248 บาท ปัจจัยสำคัญที่มีผลต่อค่าใช้จ่ายที่ศึกษา ได้แก่ ชนิดของโรคที่ป่วย ชนิดของการรักษาว่าจำต้องให้การรักษาแบบผู้ป่วยนอกหรือผู้ป่วยใน การมีเสียงหวีดเกิดขึ้นร่วมด้วยจากการป่วย และภาวะการติดเชื้อไวรัส respiratory syncytial การป่วยด้วยโรคปอดบวมรุนแรงซึ่งต้องรับรักษาไว้ในโรงพยาบาลจะมีค่าใช้จ่ายเฉลี่ยสูงสุด เท่ากับ 2,348 บาท ในขณะที่การป่วยด้วยโรคหลอดลมอักเสบจะมีค่าใช้จ่ายเฉลี่ยต่ำสุดเท่ากับ 924 บาท เนื่องจากค่าใช้จ่ายในการรักษาผู้ป่วยแบบผู้ป่วยในสูงเป็น 3.5 เท่าของการรักษาแบบผู้ป่วยนอก ดังนั้นการหาแนวทางและนำไปสู่นโยบายในการปรับ ปรุงประสิทธิภาพของการรักษาผู้ป่วยแบบผู้ป่วยนอก เพื่อปรับมาใช้กับผู้ป่วยในบางประเภทที่ปฏิบัติในขณะนี้จะช่วยลดค่าใช้จ่ายได้

คำสำคัญ : ค่าใช้จ่าย, โรคติดเชื้อทางเดินหายใจส่วนล่าง

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