DIRECT COST OF HOSPITALIZATION OF PEDIATRIC FOCAL EPILEPSY PATIENTS IN A TERTIARY MEDICAL CENTER

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ABSTRACT

OBJECTIVES: To determine the cost of hospitalization, percentage distribution of expenses, and average expenditures covered by PhilHealth, hospital share and patient's share in financing the hospitalization of pediatric focal epilepsy patients in a tertiary government hospital.

METHODOLOGY: This is descriptive retrospective research of patients diagnosed and managed as focal epilepsy from July to December 2018. Mean, standard deviation and percentage distribution of expenses were determined.

RESULTS: The mean cost of hospitalization is 21,545.96 Php and the laboratory cost contributes the most to the total cost with a mean of 6,046.08 Php. The mean cost shouldered by PhilHealth is 3,734.26 Php which is 17.33% of the total cost of hospitalization.

CONCLUSION: The laboratory cost makes up most of the hospital cost. Philhealth covers a small percentage of the hospitalization cost of pediatric focal epilepsy patients with most of the total cost shortly followed by the patient's share.

KEYWORDS: *Hospitalization cost analysis, Pediatric focal epilepsy, PhilHealth coverage.*

INTRODUCTION

The International League Against Epilepsy describes epilepsy as one of the most frequent neurological diseases, characterized by abnormal electrical activity resulting to seizures or unusual behaviour, sensations and sometimes loss of awareness.[1]. According to a multicenter cross-sectional study by Ahmed Hussein Subki, et al. on the impact of pediatric epilepsy on children and families, an estimated 70% of people with epilepsy could be seizure free if properly diagnosed and treated, yet about three quarters of individuals with epilepsy in low-income countries do not receive the treatment they need increasing their risk of dying prematurely [3]. Reasons for this premature mortality in middle- and low-income countries are more commonly related to lack of access to health facilities when seizures are long-lasting or occur approximate without recovery in between, and preventable causes like drowning, head injuries and burns[4].

Epilepsy patients are more likely to have more physical problems (such as fractures and bruising from injuries related to seizures), as well as higher rates of psychological conditions, including anxiety and depression. Likewise, epilepsy increases the risk of premature death up to three times higher than in the general population, with the highest rates of premature mortality

found in low- and middle-income countries and in rural areas[2]. About 0.5% of the global burden of disease is due to epilepsy, a time-based measure that combines years of life lost due to premature mortality and time lived in less than full health. Various studies have shown the significant economic implications caused by epilepsy in terms of health-care needs, premature death and lost work productivity. [6,7,8] In the Philippines, apart from the economic burden already posed by epilepsy itself, there are also issues with poor health-seeking behavior, inadequate hospital facilities and personnel in the countryside, expensive medications, and the persistent dismissal of epilepsy as a public health concern by the authorities. These may explain the treatment gap of epilepsy which has remained unaddressed in the country for decades.[9] Another concern is poor PhilHealth coverage and there is no existing Z-package for epilepsy, there is currently just a case rate disease in Philhealth covering a total of Php 7,800 of the hospital cost [10].

This study was done to provide data that is valuable to policy makers to come up with policies and regulations. This aims to assess the direct cost of hospitalization of children with epilepsy and determining the financial benefit from PhilHealth in terms of coverage of hospitalization cost due to epilepsy. It can help determine the extent to which this health agency can provide financial protection for its members and can be used to revise existing policies to improve health services provision to patients with epilepsy.

OBJECTIVES OF THE STUDY

General Objective: To determine the direct cost of hospitalization of pediatric focal epilepsy patients in a tertiary hospital from July to December 2018.

Specific Objectives:

1. To determine the average total direct cost of hospitalization due to focal epilepsy.

2. To determine the percentage distribution of expenses incurred and its average costs during hospitalization.

3. To determine the proportion of direct hospital expenses and the average expenditures covered by PhilHealth, hospital share and patient's share in relation to the financing of the hospitalization.

METHODOLOGY

This is descriptive retrospective research of patients diagnosed and managed as focal epilepsy from July to December 2018. This study included pediatric patients ages 1 month - 18 years old diagnosed and managed as focal epilepsy based on the final diagnosis with ICD codes G40.0, G40.1, G40.2 and G40.3 (Localization-related focal idiopathic epilepsy and epileptic syndrome with seizures of localized onset, localization-related focal symptomatic epilepsy and epileptic syndrome with simple partial seizures, localization-related focal symptomatic epilepsy and epileptic syndrome with complex partial seizures, and generalized idiopathic epilepsy and epileptic syndromes respectively) who were members of Philhealth during their admission at the

Philippine Children's Medical Center from July to December 2018. The following were excluded in the study: non-members or dependent of Philhealth, admitted under private service, presence of co-morbidity diseases at time of admission and insufficient data during the time of review. All admitted pediatric focal epilepsy patients from July to December 2018 which amounted to 30 patients were used for the study.

The Medical Records Section Officer generated a list of patients diagnosed with Focal Epilepsy or with the ICD codes G40.0, G40.1, G40.2 and G40.3 admitted from July to December 2018. With the use of the inclusion and exclusion criteria, the Medical records Section Officer generated the final list of eligible patients for the study. The final list of study participants was placed in a sealed envelope by the Medical records Section Officer and was given to the Billing Section for retrieval and reprinting of hospital bills. A research assistant was appointed to remove any identifying information from the printed hospital bill (patient's name, parent's and/or guardian's name, address, name of attending physician, admission number) by cutting and covering with permanent ink. A numerical coding system for identification was provided to the anonymize hospital bill. These coded hospital bills were then given to the investigator for data collection. The following information were collected using a structured form: age, length of hospitalization, social services classification, No Balance Billing policy coverage, actual hospital bill, PhilHealth coverage, hospital share, patient's share, and the distribution of hospital expenses (laboratory, intravenous fluids, medications, medical supplies, floor procedures, room boarding). All cost data were presented in peso (PhP) where the estimated rate of conversion as of 2019 was $1=50.89. The data collected was tabulated in Microsoft Excel program. Quantitative variables were summarized as mean, standard deviation and percentage distribution of expenses were determined.

RESULTS

The Medical Records Section generated a list with 30 pediatric focal epilepsy patients with the use of the study's inclusion criteria. Of the patients included, the mean age was 7.5 years and the mean length of hospitalization is 6.3 days (Table 1).

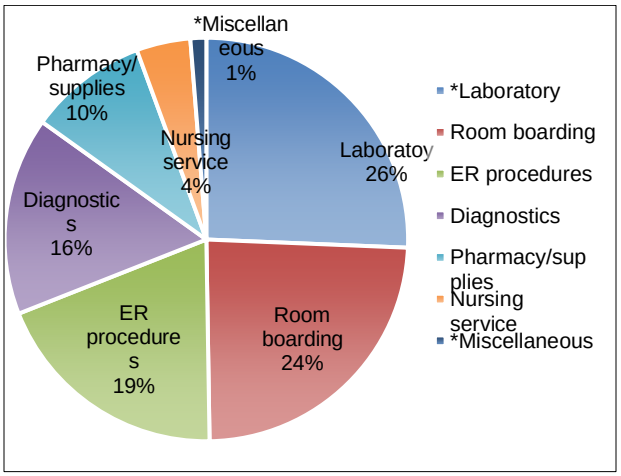
Table 1. Focal Epilepsy patient characteristics

Variables	Mean, SD	Median	Range
Age, years	7.50 (5.47)	7.00	1.00 – 17.00
Length of hospitalisation, days	6.30 (7.06)	3.50	1.00 – 30.00

The mean cost of hospitalization is 21,545.96 Php and the laboratory cost contributes the most to the total hospital bill with a mean of 6,046.08 Php (Table 2).

Table 2. Breakdown of Cost of Hospitalization

Item	Range of Cost in Php	Cost in Php (mean, SD)
Total hospital bill	865- 86,671.86	**21,545.96** (21,522.05)
Laboratory	32,516	**6,046.08** (7,219.12)
Room boarding	700- 21,000	**4,510.00** (4,898.37)
Diagnostics	0- 12,239	**4,078.50** (5,918.22)
Pharmacy/supplies	5.5- 14,272	**2,744.29** (4,255.98)
Emergency procedures	0-5,656.38	**2,482.18** (1,381.44)
Nursing service	0-6,779.5	**1,305.93** (2,143.06)
Miscellaneous	0-7,030	**379.00** (1,379.11)



*Laboratory: Drug assays and blood chemistries
*Miscellaneous: Ambulance fee for specimen to be sent out to other institutions

Figure 1. Mean percent contribution of expenses to total hospital bill

There is no significant difference between the mean cost of hospitalizations of patients aged 7 years and below (Php 21,477.12), and patients more than 7years of age (21,635.97) (p=0.984). The total cost of hospitalization is significantly higher among those hospitalized for >15 days (Php 32,583.30) compared to those hospitalized for ≤15 days (Php 10,508.61) (p=0.003). (Table 3).

Table 3. Comparison of total cost of hospitalization by patient characteristics

Variables	Cost in Php (mean, SD)	P value
Age (median)		
≤7 years (*n*=17)	**21,477.12** (22,348.44)	0.984
>7 years (*n*=13)	**21,635.97** (21,294.22)	
Length of hospitalisation (median)	**10,508.61** (8,851.59)	**0.003**
≤15 days (*n*=15)	**32,583.30** (24,901.46)	
>15 days (*n*=15)		

For the sources of funds, PhilHealth share shoulders less of the total hospital bill in contrast with the patient's share and the hospital share with percent contributions computed at 23.99% 26.32% and 35% respectively. (Table 4)

Table 4. Distribution of fund sources

Item	Cost in Php (mean, SD)
Total hospital bill	**21,545.96** (21,522.05)
Hospital share	**8,282.89** (9,568.61)
Patient share	**7,069.79** (10,442.35)
PhilHealth share	**3,734.26** (4,019.30)
Guaranteed funds	**2,459.04** (4,099.37)

DISCUSSION

The cost of hospitalization in this study is mostly comprised of laboratory cost (28%), room boarding (21%), diagnostics cost (19%), pharmaceutical cost (13%), and ER procedures (11.5%), with a mean total hospital cost of 21,545.96 Php (423.38$).Of this, the mean cost of hospitalization shouldered by PhilHealth is 3, 734.26 Php ($73%) (case rate: 7,800 Php)

Majority of the costs of epilepsy are attributed to hospital admissions and drugs; with drug costs dominating in more well controlled epilepsy, while in difficult to control epilepsy both costs of hospital admissions and drugs are significant. This is more observed in newly diagnosed patients[11]. The difference in the level of control of epilepsy could explain the varied degree for the need for further tests and use of additional medications, hence the wide standard deviation of hospital costs.

According to findings of the studies from other countries, the cost of hospitalization ranges from approximately 52,000 Php ($1,022) to 2.4M Php ($47,862) [12,13]. In contrast with this analysis, Pato-Pato showed that the most significant source of hospital cost is on medicines [14].

A study by Wagner in South Africa found the combined average annual outpatient, clinic, and hospital out-of-pocket cost to be 2, 900 Php ($58.41) [15]. On the other hand, this study showed that the average patient's out of pocket share costs 7,069 Php ($139). The result of this study demonstrated inadequate coverage of the medical insurance of these patients and that majority of the total hospital costs burden were shouldered by the hospital (38.4%) and from the patient's out of pocket share (32.8%). Aside from the budget from the government, some sources of funds that the hospital used to shoulder percentage of the costs include donations from sponsors and revenues from pay patients.

This study's results may be used in formulating new policies for better health insurance coverage and lowering the out-of-pocket cost of hospitalized pediatric epilepsy patients here in the Philippines. This study only pertains to the patients with focal epilepsy admitted in a tertiary government hospital.

CONCLUSION

The cost of hospitalization of pediatric focal epilepsy patients can cause a significant economic burden to the family because of its high out-of-pocket cost. Furthermore, this study supported that the actual hospital cost being shouldered by PhilHealth is inadequate and significantly lower than what is shouldered by a government hospital and from the out-of-

pocket patient's share, hence there is a need for improvement in the policies of the medical insurance coverage for these patients.

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