

Outpatient service tariff determination based on unit cost analysis mixed with community ability and willingness to pay

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Abstract

Purpose: The study aims to calculate the rational outpatient tariff based on unit cost analysis, ability and willingness to pay. **Method:** The research is an observational study with a qualitative approach. Secondary data are obtained retrospectively to calculate unit costs and tariffs. Primary data is collected through questionnaires to see the ability and willingness to pay (WTP). **Result:** The calculation using the step-down method obtained the unit cost for general practice IDR 79,337, dental care IDR 151,635, psychologist consultation IDR 115,283, and fitness center IDR 236,555. The respondent's ATP value is IDR 138,808, with an average examination fee of IDR 56,093. When coupled with an improvement in service and facility quality, 58.1% of respondents agreed to a 10% rate increase. With a 20% rate increase, the willingness to pay decreases to 40.6%. In the bivariate analysis using the chi-square test, the variables significantly affecting WTP are patients' perceptions of the suitability of service costs ($p=0.000$). In contrast, age, gender, occupation, education, income, number of family members, and insurance ownership do not significantly influence WTP. **Conclusion:** The service rate is lower than the unit cost calculation. By looking at the ability and willingness to pay, it is possible to evaluate the tariff.

Keywords: ability to pay (ATP); tariff; unit cost; willingness to pay (WTP)

INTRODUCTION

Primary health care serves an essential role in achieving universal health coverage of Sustainable Development Goals, expecting the whole population to be able to acquire and access high-quality care following individual needs without a financial burden in 2030 [1]. Care delivery systems require firm, stable, and sustainable financing resources. The financial sources could originate from various schemes, including national and local government budgets, both from direct and indirect tax. The second financial source originates from social or private insurance. Third, funding is paid at cost by the community/ out of pocket [2].

For private clinics that are not entitled to a government subsidy, rational tariff setting needs to consider unit cost analysis to cover operational, maintenance, and developmental budgets. Previously, tariff setting at Gadjah Mada Medical Center (GMC), implemented in a normative approach, refers to the standard tariff of primary care ruled by the regency regulation area. The Sleman Regent Ordinance Number 54.3 of 2020 established the baseline rules regarding Health Service Tariffs at primary health care as a benchmarking with hospital pricing under the same institution. Therefore, no actual calculation and analysis were conducted.

Increasing public demands toward health care services encourage human resources development in provisioning care [4]. Clinics, as primary health care providers, are required to leverage the public health status [5]. The growing number of visits from non-insurance patients and the merger of private health insurance offering fees for services care demand detailed unit cost calculations for any incurred product and service delivery.

Apart from the provider perspective, tariff setting needs to be considered from the consumer's point of view regarding the community's ability to pay (ATP) and willingness to pay (WTP). Cost analysis serves as decision-making input for both short-term and long-term evidence-based policy.

Scheming rational tariffs emerges as a crucial quality and cost control effort. Rational rates are determined by calculating the unit cost and recognizing characteristics of products that provide information related to ability and willingness to pay from the public [6].

Clinics are expected to offer high-quality health care for society. Adequate financial support for operational and development activities is essential. GMC envisaged an effective and efficient tariff calculation for sustainable care delivery as a private clinic without government subsidy. Finance is one critical element of business organization. Financing analysis was urgently needed to safeguard the continuity of healthcare services [7].

Rational tariff setting based on unit cost analysis aims to ensure that the allocated fund health insurance authority is sufficient to provide care services. The results from tariff calculation could be used as groundwork for developing the clinic's future facilities and services strategic plan.

METHODS

This is an observational study with a quantitative approach. Retrospective secondary data was collected toward finance documents to calculate the unit cost and tariffs. Primary data was retrieved from the survey to measure the community's ability and willingness to pay. The unit cost of the outpatient clinic was traced back using the Hospital Cost Allocation Tool (Hospical) v2. This study implemented a step-down cost analysis method to calculate the unit cost [Table 1]. Proposed outpatient tariffs are obtained after calculating the unit cost of the procedure [Table 2]. The minimum sample for this study was 62 participants. The ability and willingness to pay responses accrued through accidental sampling with the following criteria: non-insurance patients with an out-of-pocket budget and consent to participate in the study. A structured questionnaire was distributed to

evaluate the community's perspective of outpatient care at GMC, the community's ability to pay [Table 4], and the community's willingness to pay [Table 5]. A univariate analysis was performed to describe the individual characteristics and demonstrate the frequency distribution and proportion [Table 3]. A chi-square test was conducted to identify the correlation between variables and the community's willingness to pay. The statistical test in this study ran on STATA software. The study was initiated after ethical approval was granted by the committee. This study took place at the Gadjah Mada Medical Center clinic.

The data collection was carried out through document searching, including employment data, service units, drug dispensing, service fees, office expenses, maintenance costs, medical and non-medical inventory data, buildings and vehicles inventory, incoming budget, and service output or patient visit (utilization). Observation was also conducted to identify the cost centers.

RESULTS

Unit cost searching is initiated by identifying cost centers in service units (clinical department), supporting activities (ancillary department), and general units (general department), as well as defining the allocation bases. Once cost centers have been identified, the second step was measuring utilization or total visits. Third, this study performed expense analysis (expenditure) by developing expenditure lists within a one-year budget period. Subsequently, income analysis and gradual cost distribution (step-down method) were carried out. This procedure was the final stage, where all identified costs in general and supporting units allocated to service followed the allocation bases that had been previously determined. Gradual cost distribution was performed two times. The first distribution employed whole allocation bases (the floor space); meanwhile, the second distribution was subject to utilization/ number of visits.

Table 1. Outpatient unit cost at GMC Clinic in 2021

Main Service Unit	Total cost (IDR)	Output (visit/ year)	Unit cost (IDR)
General Outpatient	3,500,263,877	44,119	79.337
Dental Outpatient	621,096,387	4,096	151.635
Psychology	83,926,013	728	115.283
Fitness center	662,354,448	2,800	236,555

In 2021, the total admissions at the outpatient GMC clinic was 51,743 from general, dental, psychology,

outpatient, and fitness centers. Total expenditure in 2021 was IDR 4,867,640.726, -. The general outpatient unit had the smallest unit cost compared to other service units due to the vast number of patient admissions.

Initially, the tariff setting was performed by weighing each service unit as Relative Value Units (RVU). Associated factors include the procedure's difficulty level, time duration, expertise, and cost of single-use materials. Annual projection of total utilization was carried out to set the denominator for calculating the unit cost of each action or procedure. The proposed tariff in this study incorporates a 3-year projection considering increased equipment price, materials, associated resources, and inflation rate.

Cost recovery rate (CRR) yielded from the ratio between fare revenue and total operating costs. The general outpatient average CRR was 77%, while dental outpatient was 85%. CRR less than 100% signifies more expenditure compared to revenue. It inferred that the

Table 2. Proposed outpatient tariffs based on unit cost analysis

Actions/ Procedures	Tariff based on UC	CRR (%)	Proposed Tariff
General Outpatient			
Registration	8,658	58	10,000
GP consultation	25,975	96	30,000
Simple dressing change	28,861	69	30,000
Health certificate	34,633	72	35,000
EKG	57,722	87	60,000
Drug test	132,308	76	135,000
Cerumen evacuation	43,292	58	45,000
Color blind test	34,633	101	35,000
Stitches removal	40,406	62	41,000
Nail extraction	115,445	95	116,000
Dental Outpatient			
Devitalization	62,587	80	65,000
Dressings	42,126	95	42,000
Abscess incision/ trepanation	56,168	116	57,000
Dentist Consultation	35,049	71	35,000
Mummification	120,858	79	121,000
Scaling	140,420	89	141,000
Tooth extraction (CE)	56,168	116	57,000
Tooth extraction (Citoject)	168,504	59	170,000
Extraction without complications	112,336	85	115,000
Glass ionomer cement	168,504	56	170,000

designated tariff of the clinic was insufficient to cover all the expenses. However, if the targeted groups were social insurance patients and university members, no additional charge for service could be introduced due to the subsidy from the university. When the tariffs are applied for out-of-pocket patients and private insurance groups, inaccuracy will occur. Increasing output did not correspond to the profit or additional revenue for the clinic. Increasing admission to GMC was supposed to contribute to the clinic revenue, in parallel with human resources demand for claim verification.

The tariff settings are ideally balanced between the provider's perspective and the consumer's point of view. This study measured 74 patients' ability and willingness to pay from the clinic.

Table 3. Participants' characteristics (n =74)

Characteristics	%
Age (years)	
<20	6,7
20-29	74,3
30-39	9,5
40-49	5,4
≥ 50	4,1
Gender	
Male	29,7
Female	70,3
Last education	
Junior high school	4,1
senior high school	20,3
Diploma/ Bachelor's	75,6
Profession	
Housewife	4
Private employee	33,8
Civil servant	8,1
Student	27
Retired	1,4
Profession	5,4
Unemployed	10,8
Self-employed	9,5
Insurance ownership	
Insured	41,9
No insurance	58,1
Number of family members (people)	
≤ 2	25,7
3-5	60,8
>5	13,5
Income	
Low	35,2
Middle	40,9
High	23,9

Table 3 demonstrated the gender distribution of the participants. Female respondents (70.3%) were more

frequent than males (29.7%). 74.3% of respondents were aged between 20-29 years. Most of the respondents graduated from higher education with a Diploma/bachelor's degree by 75.6%. The professional respondents part big is employee private, that is 33.8%. The proportion of respondents not covered by insurance was 58.1%, while those with insurance were only 41.9%. The participants were dominated by government-based insurance. From the family structure, more participants come from a family with 3-5 members and two employed members.

The participants' salaries greatly varied between IDR 300,000. -to IDR 35,000,000. -with an average of IDR 5,777,857/ month (Table 4). The total expenses in Table 4 accumulated from food consumption expenditure, non-essential food expenditure, and non-food expenditure per household per month. The average total spending of the participant was IDR 4,172,791.

CTP (Capacity to Pay) is earned from calculating non-food and non-essential food expenditures. The average ATP of respondents in this study is IDR 138,808, -. The private patient's ATP value GMC exceeds the average service cost by IDR 56,093,- (Table 4). The findings confirmed that purchasing power for public services is adequate.

The majority of the respondents agreed to the increasing tariff of 10%, as presented in Table 5 (58.1%). Thirteen-point-five percent of the sample disagreed, while 28.4% neutrally responded to the question. If the service rates increased by 20%, 40.6% of the respondents disagreed. Nevertheless, 16.2% of the remaining respondents agree with the tariff adjustment.

Table 4. Ability to pay

Information	Average (IDR)
Income	5,777,857
Expenditure	4,172,791
CTP (Capacity to Pay)	2,776,169
ATP (5% x CTP)	138,808

Table 5. Willingness to pay (WTP) for increased tariff (n=74)

Perception	10% tariff increase	20% tariff increase
	%	%
Agree	58,1	16,2
Unknown	28,4	43,2
Disagree	13.5	40,6

DISCUSSION

Cost analysis in this study was fabricated using actual data (Handayani et al., 2019). Based on step-down unit cost analysis, we defined the unit cost of general outpatient as IDR 79,337, -dental clinic IDR 151,635, -, psychology IDR 115,283, -, and fitness center IDR 236,555, -. General outpatients have the smallest unit cost compared to other service units. This aligns with Wulan et al. (2017) study, which reported that larger output corresponds to a smaller admission fee. General outpatients recorded the highest visits compared to service units other than 85.3%. Fitness center unit costs are experiencing an anomaly because the annual total visit decreased significantly due to COVID-19 pandemic restrictions. Reflecting on the utilization data before the pandemic, the unit cost of the fitness center is IDR 38,891.

An aggregate unit cost calculation was performed in this study by dividing the total cost of each unit service by the total visit without considering the cases or diseases from each unit.

Based on the analysis of 74 samples who participated in this study, most respondents aged between 20–29-year-old work as private employees and have no insurance (including social security). Similar to Agustina et al. (2019), our findings illustrated that millennials aged between 20-35 years who enrolled in National Health Insurance (JKN) only 52%. The group acknowledged it as missing the middle. Numerous reasons may be associated with this phenomenon, including capable groups. Still, they feel no urge to have insurance because of their health status, lack of understanding about the insurance system, and doubt about insurance. Those employees work in the informal sector, such as SMEs and part-time and contract workers, with no company responsibility to enroll them in the insurance system.

About 58.1% of the respondents had no objection to 10% tariff increases but provided them with enhanced quality of services and facilities. For that group of participants, the quality of service fairly justifies the fee that needs to be paid. This follows a survey report that found that 7% of respondents agree that service quality in GMC clinics is appropriate with charged expenses. The most dominant factor influencing the ability and willingness to pay is the perception of health service quality [11]. Despite 13.5% of the participants declining to increase tariffs, participants perceived that applied rates in GMC were reasonable and comparable to other clinics.

Adjustment of 20% rate, causing public willingness to pay to drop to 40.6%. Nevertheless, 16.2% of respondents favor a 20% increased tariff. Their most

valued aspects were fast service/ shorter queue (33.8%), polite and friendly staff (25.7%), appropriate procedure/ treatment (16.2%), cheap rates (12.2%), comfortable facilities (9.5%), and consultation duration (2.6%). In line with our survey results, because the majority of respondents are well-educated by graduating with a diploma/bachelor's, they have high awareness related to health expenditure. Consequently, their demands for health services differed from those with a low education level. Higher ability to pay that they are entitled to, shifting their priorities to acquire excellent services, including speed, facility, and supporting resources compared to affordable tariffs.

Our calculation yielded that a patient's ATP at GMC was IDR 138. 808, -. The average cost of service at GMC was IDR 56,093, -. The figures demonstrated that private patients' costs were unable to cover the expenditures.

A bivariate analysis of the Chi-square test identified one variable that significantly influenced patients' willingness to pay. The variable was the patient's perceived cost appropriateness with provided services ($p=0.000$). Age ($p=0.416$), gender ($p=0.991$), employment ($p=0.067$), education ($p=0.431$), income, number of family members ($p=0.518$), and insurance ownership (0.337) did not present meaningful correlation and influences on WTP. Similar findings were documented by Atriyani and Harun (2019). There is no significant relationship between the level of education and income to patients' willingness to pay. Another study by Julianti (2020) indicated that other factors, including employment, income, expenses, knowledge, motivation, and distance, do not correlate with the willingness to pay.

Rational rates fulfill the criteria of being reasonable and affordable for the community. The amount of service cost is not only oriented to benefits and usability. Still, it needs to be adjusted with policy administration and financing based on unit cost calculation, the public ability, and willingness to pay [14]. Within the control fee framework, clinics could implement a cost-efficiency strategy, perform rate adjustments, or increase patient admissions [15].

Tariff adjustment and setting require mature, valid, and accurate unit cost calculations, considering public ability and willingness to pay (9). Acknowledging tariffs based on unit cost calculation and the community's ability to pay, health facilities could investigate the subsidies and the targeted group for the subsidy.

CONCLUSION

Tariffs that reflect actual service costs encourage healthcare facilities to provide high-quality care corresponding to patients' needs and generate profit for

the provider for excellent services. This study confirmed that tariffs at GMC Clinic were lower than those from unit cost calculation. Considering the public ability and willingness to pay, modifying the service tariffs based on cost analysis is possible.

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