



UNIT COST ANALYSIS OF KIA CLUSTER SERVICES AT ANTANG PUBLIC HEALTH CENTER, MAKASSAR CITY IN 2025

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ABSTRACT

Maternal and Child Health (MCH) services are a priority program in health development because they are related to efforts to reduce the Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR). However, MCH services at the community health center level still face various financing challenges, such as budget constraints and cost planning that is not fully based on actual service needs. Therefore, a unit cost analysis is needed to determine the amount of service costs and assess the suitability of financing with the operational needs of MCH services. This study aims to identify direct and indirect cost components, calculate unit costs, and

compare the actual cost of services with Health Operational Assistance (BOK) funds for MCH Cluster services at the Antang Community Health Center in Makassar City. This study used a quantitative descriptive design with a top-down costing approach. Data were obtained through financial report documentation, program activity reports, and KIA Cluster service data at the Antang Community Health Center in 2025. The analysis was conducted on out-of-home family planning services, immunizations, prenatal classes, toddler classes, and visits by high-risk pregnant women (resti). The results of the study indicate that transportation costs for officers are the largest direct cost component in most services. Immunization services have the highest total cost of Rp149,402,801, while the toddler class has the lowest total cost of Rp6,018,247. The highest unit cost is found in visits to high-risk pregnant women (resti) at Rp135,801 per service, while the lowest unit cost is found in immunization services at Rp14,785 per service. Comparison with BOK funds shows that immunization services and resti visits experience a funding deficit, while other services experience a budget surplus. The study's conclusions indicate that the unit cost of KIA Cluster services is influenced by the characteristics and volume of services. Services with high target coverage have lower unit costs than home visit-based services. Furthermore, BOK funds serve as operational support and do not fully cover the costs of all KIA services

INTRODUCTION

The Maternal and Child Health (MCH) Program is a national priority program aimed at reducing the Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR). Based on the 2020 Population Census, the Maternal Mortality Rate (MMR) in Indonesia remains at 189 per 100,000 live births, one of the highest in the ASEAN region (Central Statistics Agency, 2023). This situation indicates that improving the quality of MCH services still requires the support of an effective financing system so that services can be implemented optimally and sustainably. One challenge faced is the suboptimal financing planning based on actual service needs.

Several studies have shown that inaccurate service cost calculations can lead to a mismatch between actual costs and available funding. Research by Rahmawati and Wibowo (2024) demonstrated that the effectiveness of service fund utilization impacts the quality of antenatal and immunization services. Research by Harahap et al. (2024) also emphasized that the preparation of the KIA program budget should be based on unit cost calculations (*unit cost*) to ensure that funding allocation aligns with service needs. Furthermore, Untari et al. (2021) found that rates for ANC, family planning, and immunization services at community health centers were still lower than the actual cost of the services, necessitating a financing evaluation through cost analysis.*unit cost*.

Based on the 2024 performance report of the Antang Community Health Center, the achievement of maternal and child health services is considered high, with coverage of visits by pregnant women reaching 96%, deliveries by health workers reaching 100.3%, newborn care services reaching 95.2%, and infant and toddler care services reaching 102.9%. These maternal and child health services are not only provided in the building, but also through outside services such as integrated health posts (Posyandu), classes for pregnant women, classes for toddlers, visits for high-risk pregnant women, family planning services, and immunizations, most of which are supported by the Health Operational Assistance Fund (BOK). These differences in service characteristics have the potential to cause a mismatch between actual costs and available funding allocations.

Research on analysis *unit cost* Many studies have been conducted in hospitals and certain services at community health centers, but studies that specifically analyze out-of-building services in the KIA Cluster and compare actual costs with BOK Fund funding are still limited. Therefore, this study aims to analyze *unit cost* KIA Cluster services at the Antang Community Health Center in Makassar City based on direct and indirect cost components and comparing the real cost of services with the Health Operational Assistance Fund (BOK) as a basis for

evaluating the efficiency of KIA service financing.

METHODS

This research is a descriptive quantitative study with a document study approach. Data were analyzed using the method *Top Down Costing* to count *unit cost* Maternal and Child Health (KIA) Cluster services, namely by dividing the total service costs consisting of direct and indirect costs by the number of services. The results of the analysis are presented descriptively to illustrate the magnitude *unit cost* and compare the real costs of services with the allocation of Health Operational Assistance Funds (BOK).

This study was conducted at the Antang Community Health Center, Manggala

District, Makassar City, using secondary data from the Maternal and Child Health (MCH) Cluster services for the period January–December 2025. The study population was all MCH service data, including direct costs, indirect costs, and the number of service visits during that period. The sample was determined using *total sampling*, so that all data that met the research criteria were used as samples, including out-of-house family planning (KB) services, immunizations, prenatal classes, toddler classes, and visits by high-risk pregnant women (*resti*). Analysis was conducted on direct cost components, indirect costs, and cost calculations. *unit cost*, as well as a comparison between the real costs of services and the allocation of Health Operational Assistance Funds (BOK).

RESULT

Characteristics of KIA Cluster Services

Table 1. Number of KIA Cluster Services at Antang Community Health Center in 2025

Service	Amount	Percentage (%)
KB	443	4,1%
Immunization	10.105	92,8%
Pregnant women's class	100	0,9%
Toddler Class	100	0,9%
Resti's Visit	144	1,3%
Total	10.892	100%

Source: Data Seconds 2025

Based on table 1, it can be seen that immunization services have the highest number with a total of 10,105 services (92.8%), while the services with the lowest number are the pregnant women's class and the toddler class, each with 100 services (0.9%).

Direct Cost Components of KIA Cluster Services

Table 2. Direct Cost Components of KIA Cluster Services at Antang Community Health Center in 2025

	Component	Cost (Rp)	Percentage (%)
KB Service	BHP	536.181	3,27
	Officer salary	1.574.809	9,60
	Officer transport	9.400.000	57,28
	Cadre incentives/transport	4.148.549	25,28
	Consumption of extension participants	750.000	4,57
	Total	16.409.539	100
Imunization Service	BHP	25.718.820	17,29
	Officer salary	2.698.879	1,81
	Officer transport	25.400.000	17,07
	Cadre incentives/transport	94.630.004	63,61
	Medical devices	325.820	0,22
	Total	148.773.523	100
Pregnant women's class	Officer salary	1.059.364	21,20
	Officer transport	1.500.000	30,03
	Cadre incentives/transport	936.467	18,74
	Participant consumption	1.500.000	30,03
	Total	4.995.831	100
Toddler Classes	Officer salary	881.780	18,30
	Officer transport	1.500.000	31,13
	Cadre incentives/transport	936.467	19,44
	Participant consumption	1.500.000	31,13
	Total	4.818.247	100
Resti's Visit	Officer salary	3.363.873	17,40
	Officer transport	14.400.000	74,47
	Cadre incentives/transport	1.348.513	6,97
	Medical devices	223.000	1,16
	Total	19.335.386	100

Source: Data Seconds 2025

Based on Table 2, the highest total direct costs were found in immunization services at Rp148,773,523, followed by visits to high-risk pregnant women (resti) at Rp19,335,386, out-of-home family planning services at Rp16,409,539, maternity classes at Rp4,995,831, and toddler classes at

Rp4,818,247. In out-of-home family planning services, the largest cost component came from transportation for officers at Rp9,400,000 (57.28%), while the smallest cost was consumption for counseling participants at Rp750,000 (4.57%). Immunization services were dominated by the cost of Consumables (BHP) at Rp25,718,820 (17.29%) and transportation for officers at Rp25,400,000 (17.07%), while the smallest component was medical equipment at Rp325,820 (0.22%). In the pregnant women and toddler classes, the largest cost components were officer transportation and participant consumption, each amounting to IDR 1,500,000, while for high-risk pregnant women (resti) visits, the largest cost came from officer transportation amounting to IDR 14,400,000 (74.47%) and the smallest cost came from medical equipment amounting to IDR 223,000 (1.16%).

Indirect Cost Components of KIA Cluster Services

Table 3. Indirect Cost Components of KIA Cluster Services at Antang Community Health Center in 2025

Type of Service	Non-medical equipment	Other overhead costs	Total cost
KB	246.700		246.700
Immunization	269.278	360.000	629.278
Pregnant Women Class	1.200.000		1.200.000
Toddler Class	1.200.000		1.200.000
Resti's Visit		220.000	220.000
Total			3.495.978

Source: Data Seconds 2025

Based on Table 3, the total indirect costs were Rp3,495,978, consisting of non-medical equipment costs and other overhead costs. The largest indirect costs were in the maternity and toddler classes, at Rp1,200,000 each, while the smallest indirect costs were in the restroom visits, at Rp220,000.

Total Cost and Unit Cost of KIA Cluster Services

Table 4. Total Cost of KIA Cluster Services at Antang Community Health Center in 2025

Service	Direct Cost	Indirect Cost	Total Cost	Percentage (%)
KB	16.409.539	246.700	16.656.239	8,42
Immunization	148.773.523	629.278	149.402.801	75,52

Pregnant women's class	4.995.831	1.200.000	6.195.831	3,13
Toddler class	4.818.247	1.200.000	6.018.247	3,04
Resti visit	19.335.386	220.000	19.555.386	9,89
Total	194.332.526	3.495.978	194.828.504	100

Source: Data Seconds 2025

Based on Table 4, the total cost of KIA Cluster services outside the building is Rp194,828,504. Immunization services have the highest total cost of Rp149,402,801 (75.52%), while toddler class services have the lowest total cost of Rp6,018,247 (3.04%).

Table 5. KIA Cluster Service Unit Cost at Antang Community Health Center in 2025

Service	Total Cost	Total Service	Unit Cost
KB	16.656.239	443	37,599
Immunization	149.402.801	10.105	14.785
Pregnant women's class	6.195.831	100	61.958
Toddler class	6.018.247	100	60.182
Resti visit	19.555.386	144	135.801

Source: Data Seconds 2025

Based on Table 5, the health care visit service had the highest unit cost, at Rp135,801 per service, with a total of 144 visits. Meanwhile, the immunization service had the lowest unit cost, at Rp14,785, with a total of 10,105 services.

Comparison of Actual Costs and BOK Funding

Table 6. Comparison of Real Costs of KIA Cluster Services At Antang Community Health Center in 2025

Service	Total Cost	On BOK	Difference
KB	16.656.239	23.600.000	6.943.761
Immunization	149.402.801	17.500.000	-131.902.801
Pregnant women's class	6.195.831	40.000.000	33.804.169
Toddler class	6.018.247	40.000.000	33.981.753
Resti visit	19.555.386	16.800.000	-2.755.386

Source: Data Seconds 2025

Based on Table 6, immunization services showed the largest negative difference of Rp131,902,801, indicating that the actual cost of the service was significantly greater than the

available BOK funds. Conversely, toddler and pregnant women classes showed the largest positive differences of Rp33,981,753 and Rp33,804,169, respectively, indicating that the BOK fund allocation still exceeded the actual cost of the service.

DISCUSSION

Characteristics of Services and Direct Costs of KIA Cluster Services

Based on the research results, immunization services have the highest number of visits compared to other KIA Cluster services. This high number of visits indicates that immunization is a preventive service that is carried out routinely and is one of the national priority programs with a high coverage target. The regular implementation of immunization through integrated health posts (Posyandu) and off-site services results in a higher frequency of services compared to other services such as prenatal classes, toddler classes, and visits for high-risk pregnant women. Conversely, prenatal classes and toddler classes have fewer visits because they are implemented as group educational activities with a predetermined schedule, resulting in a more limited frequency.

The number of visits influences the direct costs incurred for each service. The results showed that immunization services had the highest total direct costs, while classes for pregnant women and toddlers had the lowest. The high direct costs of immunization services were influenced by the need for consumables (BHP), staff transportation, and cadre incentives used in each service activity.

Conversely, classes for pregnant women and toddlers utilized more educational media and resources already available at the community health center, resulting in relatively lower operational costs.

For out-of-home family planning (FP) services and visits to high-risk pregnant women (resti), transportation constitutes the largest cost component compared to other components. This indicates that out-of-home services require the mobilization of health workers to the target location, making transportation operational costs a key component in service delivery. This finding aligns with research by Untari et al. (2021), which states that community-based primary health care requires substantial operational support, particularly for staff transportation and field activities. Furthermore, research by Armahedi and Witcahyo (2020) also indicates that operational costs are one of the largest contributors to the financing of the MCH program at community health centers.

These findings indicate that the characteristics of each type of service influence the cost structure. Therefore, budget planning for KIA services requires considering the operational needs of each service to ensure more efficient allocation of funds and reflect actual needs on the ground.

Indirect Cost Analysis of KIA Cluster Services

Based on the research results, indirect costs for all KIA Cluster services consist of building depreciation, equipment depreciation, electricity, water, internet, maintenance, and other administrative costs. Unlike direct costs, which are influenced by the type of service activity, indirect costs tend to be more evenly distributed because they are operational costs shared by all service units at the Antang Community Health Center.

The magnitude of indirect costs reflects the use of supporting resources in the delivery of healthcare services. Although not directly related to patients, these costs still contribute to the smooth operation of services by supporting the overall operation of healthcare facilities. Research by Hariyoko et al. (2021) explains that indirect costs are a crucial component in service cost analysis because they reflect the use of shared resources that are often invisible in the direct service process.

Calculating indirect costs also provides a more accurate picture of the actual cost of services. If only direct costs are considered, the resulting unit cost value could potentially underestimate the actual cost. Therefore, all cost components need to be taken into account to produce more comprehensive cost information as a basis for preparing healthcare budgets.

Unit Cost Analysis and Suitability of BOK Fund Financing

The results of the study show that the value *unit cost*. The costs vary for each type of KIA Cluster service. These differences are influenced by the total cost of the service and the number of visits for each service. Services with a high number of visits do not necessarily have the best quality *unit cost* highest because the service costs will be spread over a greater number of visits. Conversely, services with a relatively small number of visits can produce *unit cost* which is higher if it requires large operational costs.

The analysis also revealed a discrepancy between the actual costs of services and the funding sourced from the Health Operational Assistance Fund (BOK). For some services, the BOK Fund was sufficient to support operational needs, while for others, there was still a gap between actual costs and available funds. This situation indicates that the funding level does not fully reflect the actual cost requirements for each type of service.

This finding is in line with research by Harahap et al. (2024) which states that the preparation of the KIA service budget should be based on the results of calculations *unit cost* to ensure more targeted fund allocation. Research by Untari et al. (2021) also found that primary healthcare service rates are still below actual costs, necessitating regular financing evaluations. Therefore, the analysis *unit cost* not only providing information on service costs, but also being the basis for preparing

more efficient budget planning and oriented towards real service needs.

The results of this study provide implications that the calculation *unit cost* can be used by community health center management as a basis for evaluating the use of BOK funds, preparing proposed activity plans (RUK), and preparing activity implementation plans (RPK). With budget planning based on real costs, it is hoped that KIA services can be carried out optimally, efficiently, and sustainably.

Analysis of Cost Components Based on Type of KIA Cluster Services

Overall, the research results show that the cost structure of each KIA Cluster service differs depending on the type of service provided. Immunization services are dominated by the costs of consumables and staff transportation, while out-of-home family planning services and visits to high-risk pregnant women are more heavily influenced by transportation costs. In the prenatal and toddler classes, the majority of costs are allocated to staff transportation and participant meals as part of the group education activities.

These differences in cost structures indicate that resource requirements for each service cannot be equated. Therefore, budgeting for maternal and child health services should not use a uniform approach, but rather be tailored to the operational characteristics of each service. This approach will result in more efficient budget allocation

and support improved service quality at the community health center level.

Overall, the results of this study confirm that the analysis *unit cost* can provide an overview of the service cost structure and serve as a basis for evaluating financing efficiency. This information can be used as a consideration in management decision-making, particularly in preparing budget plans and allocating BOK funds to better align with the needs of maternal and child health services at the Antang Community Health Center in Makassar City.

CONCLUSION

This study shows that the unit cost of Maternal and Child Health (MCH) Cluster services at Antang Community Health Center varies for each type of service, depending on the characteristics and resource requirements. Immunization services have the highest total direct costs, while the toddler class has the lowest direct costs. The highest unit cost is found in services for high-risk pregnant women (*resti*), while the lowest is found in immunization services. A comparison between the actual cost of services and the Health Operational Assistance Fund (BOK) shows that funding adequacy varies for each service, so that unit cost analysis can be the basis for planning and evaluating health service financing at the community health center level.

This study contributes to providing information on the unit costs of maternal and child health services as a basis for financing

decisions in primary healthcare. However, this study was limited to a single community health center and a single observation period, so further research with a broader scope is needed.

SUGGESTION

The results of this study are expected to be used by the Antang Community Health Center as a basis for planning activities and allocating BOK funds according to the actual needs of each type of MCH service. For the

Health Office, the results of this study can be used as a consideration in evaluating the adequacy of financing and allocation of funds for MCH services at the community health center. Further research is recommended to be conducted at several community health centers with different characteristics, using other cost calculation methods such as Activity-Based Costing, and examining the relationship between unit costs, service quality, and the achievement of maternal and child health indicators.

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