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Cost awareness analysis on acute appendicitis treatment with social security agency for health (BPJS in health sector) at Budi Kemuliaan Hospital Batam

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ABSTRACT

Background: Financial costs are recognized as one of the causes of lack of access to adequate health services, not least in the treatment of Acute Appendicitis with Social Security Agency for Health (BPJS in Health) in Budi Kemuliaan Hospital, Batam. Data describing health workers' awareness of costs is still limited. Increasing awareness of health workers can encourage increased treatment efficacy and reduce wasteful spending costs. This research aims to analyze the cost awareness of health workers' in the efficiency of Acute Appendicitis treatment.

Methods: This research was a qualitative descriptive study accompanied by direct observation on the implementation of clinical pathways and SOP in cases of Appendicitis Acute in Budi Kemuliaan Hospital, Batam. In this study also conducted interviews involving nine main informants and three triangulation informants.

Results: The average loss value Budi Kemuliaan Hospital in 2017 was Rp. 3,898,635, - and increased in 2018 to Rp.5,597,241,-. Low knowledge of health workers about case-mix which causes low cost awareness behavior. There was a low awareness of costs identified in the implementation of clinical pathways and SOP in cases of Appendicitis Acute in general surgeons, resulting in high financing. There was also low management monitoring. This has the potential to be a source of financial loss for hospitals.

Conclusion: The lack of cost efficiency for Appendicitis Acute due to lack of cost awareness and monitoring of hospital management, so that it is necessary to carry out periodic monitoring related to the Cost awareness behavior of health workers.

Keywords: cost awareness, Appendicitis Acute, Social Security Agency for Health, *BPJS* in Health, cost efficiency
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1. Introduction

Social Security Agency for Health (*BPJS* in health sector) appointed as the provider of the health service system with quality control and cost control framework [1]. Implementation of health services that remain of good quality with efficient cost is carried out by implementing a patient safety program that refers to the edition 1 of the SNARS Accreditation, by using clinical pathways in health services [2].

Basically the situation of handling acute appedicitis with both Social Security Agency for Health and Non- Social Security Agency for Health is no different. A little difference in terms of the timing of the implementation of the treatment, which Social Security Agency for Health patients must queue for surgery. In addition, the basic difference is in the way to hospital payment, if the patient uses *BPJS* then the payment is in the Package system (INA CBGs), while the non-*BPJS* in health sector patient pays the Fee for Service system (depending on the type of service provided).

Financing of patient services for participants of *BPJS* in health sector for advanced health care providers such as hospitals is carried out with a casemix system or known as Indonesian Case-Based Groups (INA-CBGs). This made the hospital has to be observant in financial management because the income of INA-CBGs that are applied for payment of claims for health services for patients can seem

small due to the presence of actions that did not reach the cost efficiency with a large portion of the cost of the set cost package. This happened due to the mindset of medical personnel in managing the services of patients not yet aware of the costs associated with drug efficiency, disposable materials, or for medical support [3].

BPJS in health sector program implemented by the government using a managed care system, so payment for providers did not use a fee for service pattern but uses a reimbursement system (prospective payment with a predetermined amount of fees). To get the benefit from *BPJS* in health sector, hospitals must be able to implement efficiency and cost-effectiveness, can develop good health management, good quality coding, claim quality and do not commit fraud. Internal and external demands currently influence management of hospitals. The internal demands are formed cost containment (cost control), and the external demands are from stakeholders [4].

The essence of this cost containment was the realization of cost awareness for all parties in the hospital, head of the hospital and management. Management is aware that the costs borne by the patient were the result of the work of the employee and all the components involved in the hospital. The management is also aware that no matter how wrong it was done and dissipation will make increasing cost that must be borne by the patient [5].

The doctor's ignorance of costs, combined with their tendency to underestimate the expensive of drug prices and overestimate the low prices, shows a lack of appreciation of the large differences in costs between cheap and expensive drugs. This difference in appreciation can affect the whole drug expenditure [6].

Budi Kemuliaan Hospital in Batam is a non-profit hospital with type B under the Budi Kemuliaan Batam foundation. Budi Kemuliaan Hospital in Batam collaborated with *BPJS* in the health sector since the start of the *Jaminan Kesehatan Nasional (JKN)* program in 2014. This study used visit data from outpatients in 2017. There are 75,224 people, 58.3% were *BPJS* in health sector patients while inpatients were 10,390 people, *BPJS* in health sector patients as much as 63.2%.

The majority of surgeons were receiving not much training in the health economy, and have poor knowledge about the costs of surgical equipment. However, there are opportunities to increase cost awareness in the operating room, which can lead to a reduction in dissipation and increased use of resources.

Many surgical cases at Budi Kemuliaan Hospital in Batam have the potential to be one of the examples of general surgery patients with guaranteed *BPJS* in health sector from inpatient claims data in the general surgery section in the period January to December 2017 totaling 993 patients. Hospital income amounting to Rp7,084,854,187 (±US$501,597; ±15,398,576 baht); INA-CBG's income amounted to Rp6,987,996,168 (±US$494,739; ±15,188,060 baht); negative difference of Rp1,904,678,113 (±US$134,848; ±4,139,722 baht). There were 109 cases of Acute Appendicitis with appendectomy which caused a potential loss of Rp491,043,714 (±US$34,765; ±1,067,258 baht) during 2017. The calculation of the potential loss of the hospital will be more detailed if it is calculated the real costs incurred by the hospital for Acute Appendicitis services.

Based on the results of the pre-survey in the Budi Kemuliaan Hospital in Batam, several allegations related to the cost of Acute Appendicitis services that have the potential to loss caused by the lack of understanding of general surgeons related to the function of the clinical pathway and low-cost awareness. So, hospital monitoring and cost control systems is required for these hospital to control costs that are used to perform the surgery Acute appendicitis. These things were the basis of the research problem, "How is to analyze the costs awareness of health workers in the efficiency of treatment of Acute Appendicitis with *BPJS* in health sector at Budi Kemuliaan Hospital, Batam?"

2. Method

This research was a descriptive study using a qualitative approach with cross sectional design, document review of the procedure for claiming *BPJS* in health sector on the surgery Acute Appendicitis, structured and unstructured interviews with informants that have been determined. This research is a descriptive study using a qualitative approach with a cross sectional design, which is carried out by document review of the procedure for claiming Social Security Agency for Health in health sector on

the surgery Acute Appendicitis and conducting structured and unstructured interviews with informants that have been determined. This study did not involve patients as research subjects, but only health workers, management and hospital owners.

The sample in this study were health workers who were directly involved in Acute Appendicitis treatment measures, amounting to 12 people, including the main informant (9 people) and triangulate informants (3 people). The main informants of this research included 1 permanent general surgeon, 2 part-time general surgeons, 1 operating room nurse, 1 surgical inpatient nurse, 1 inpatient coder, 1 pharmacy/pharmacist head, 1 head of medical services, 1 head of the case-mix/ *JKN* section and triangulation informants were three informants, namely from the executive board of the Budi Kemuliaan Association, the director of the hospital and the head of finance division.

Research variables include cost efficiency, knowledge of health workers, cost awareness of behavior, implementation of SOP and Clinical Pathway. Data collection was done by in-depth interviews with both the main informants and triangulate informants. Qualitative analysis is carried out to see the relationship between research variables, which is done by analyzing the perspective of the main informants and compared with the results of observations and perspectives from triangulation informants. Through a variety of perspectives is expected to obtain results closer to the truth.

3. Results

Funding in the treatment of Acute Appendicitis with *BPJS* in health sector

Table 1. Comparison of losses incurred in 2017 and 2018

Year	Income of INA-CBGs	Income of Hospital	Loss
2017	Rp396,796,800	Rp724,282,165	- Rp327,485,365
2018	Rp407,775,200	Rp900,332,424	- Rp492,557,224

Rp1 = ±US$0.000071 = ±0.0022 baht

Based on the data of Acute Appendicitis patients in Table 1, the trend of income disparity was increased. Previously in 2017, the income disparity was negative (loss) of Rp327,485,365 (±US$23,184; ±711,773 baht) and become higher with a negative value in 2018 of Rp492,557,224 (±US$34,871; ±1,070,548 baht). Even though the number of Acute Appendicitis patients in 2017 was 84 patients and increased to 88 patients in 2018. The average loss value in 2017 was Rp3,898,635 (±US$276; ±8,473 baht) and increased in 2018 to Rp5,597,241 (±US$396; ±12,165 baht). The value of loss (loss) is determined by several indicators, namely the length of the day of care (LOS), the use of disposal materials, the use of drugs and Medical Support (Radiology / Laboratory) conducted.

The impact caused by an increase in losses (LOSS), then the hospital operating losses will increase, and if the loss (loss) falls, the profit of the Hospital will increase. The effort that has been made by the hospital to suppress LOSS is by forming the Casemix Team, which is tasked to monitor the costs of *BPJS* in health sector patient services.

Table 2 describes CP which shows the implementation of Acute Appendicitis treatment based on Clinical Pathway, while UR is a method to ensure service quality related to cost savings. Utilization Review cost control mechanism by checking whether the service is medically provided and whether the service is given appropriately. Of the five Acute Appendicitis patients, it is known that each service component cost exceeds the costs set at the utilization review.

Table 3 shows that the conditions in the Acute Appendicitis service in 2018, the average length of stay (LOS = Length of Stay) according to the Clinical Pathway (CP) is 3 days, but the real condition observed by the average LOS is 5 days. The average cost of disposal materials according to CP is Rp1,106,000 (±US$78; ±2,403 baht) but the real costs incurred are Rp1,005,445 (±US$71; ±2,185 baht). The average cost of using drugs according to CP is Rp306,000 (±US$21; ±665 baht) but the condition of real costs in service is Rp1,257,142 (±US$89; ±2,732 baht). The average cost of Medical Support (Radiology / Laboratory) according to CP is Rp519,000 (±US$36; ±1,128 baht) but the real costs incurred are Rp715,400 (±US$50; ±1,554 baht).

Table 2. Data of acute appendicitis patients after utilization review on 2018

Data		Analysis			
		LOS	Disposable Materials	Drugs	Medical Support
PATIENT 1	CP	3 days	Rp1,106,000	Rp306,000	Rp519,000
	UR	6 days	Rp1,298,500	Rp1,654,000	Rp1,894,000
PATIENT 2	CP	3 days	Rp1,106,000	Rp306,000	Rp519,000
	UR	6 days	Rp1,251,500	Rp1,341,000	Rp744,500
PATIENT 3	CP	3 days	Rp1,106,000	Rp306,000	Rp519,000
	UR	6 days	Rp748,500	Rp1,585,500	Rp289,000
PATIENT 4	CP	3 days	Rp1,106,000	Rp306,000	Rp519,000
	UR	6 days	Rp1,185,500	Rp622,500	Rp392,500
PATIENT 5	CP	3 days	Rp1,106,000	Rp306,000	Rp519,000
	UR	6 days	Rp1,368,500	Rp3,819,500	Rp689,000

Rp1 = ±US$0.000071 = ±0.0022 baht

Table 3. Comparison of UR and CP average on 2018

Data	Analysis			
	LOS	Disposable Materials	Drugs	Medical Support
CP	3 days	Rp1,106,000	Rp306,000	Rp519,000
Average of UR	5 days	Rp1,005,445	Rp1,257,142	Rp715,400

Rp1 = ±US$0.000071 = ±0.0022 baht

3.1 Knowledge of health workers

The results of interviews with the main informants showed that the informants had known the services of Acute Appendicitis at a low cost, and also knowing that at any point it could cost a lot such as the use of old consumables, drugs, and LOS. Some general surgeons argue that using inexpensive consumables has an effect on patient safety, and the small income of claims is a matter of hospital management, not their responsibility. So that understanding regarding payment for health is limited to just knowing. Most informants do not understand and lack knowledge about coding and case-mix. The results of interviews with triangulation informants showed that the costs of Acute Appendicitis services were known to do a lot of waste done by general surgeons such as the use of consumables.

Table 4. In-depth interviews conclusions about Casemix Service Cost and Payment Knowledge

Informant	Service cost	Casemix
Main	It is known that service fees are small	Most doctors and units do not understand and lack knowledge about coding and case-mix.
Triangulate	There is still a lot of waste on the use of consumables	The resume is not filled, and the understanding of the case-mix is still lacking.

3.2 Cost awareness behavior

The results of interviews with the main informants revealed that many health workers who already knew about the cost of Acute Appendicitis treatment were low, but there was no awareness to do efficiency in consumables, drugs, and LOS to reduce losses due to small costs. Every general surgeon has their treatment in the treatment of Acute Appendicitis which also has an impact on the selection of consumables used. The doctor does not approve emphasis on the cost of using cheap consumables because it is feared that it will reduce the quality of services that will also have an impact on the recovery of patients. In-depth results with triangulation informants are known to realize that costs are still low, especially in In guest doctor. There are still services which cost more than the income of INA-CBGs that have been packaged because some still like to experiment in the services of Acute

Appendicitis.

Table 5. Conclusion In-depth interviews about cost awareness behavior

Informant	Cost awareness behavior
Main	Many doctors know that the cost of Acute Appendicitis treatment is low, but there is no awareness of them to do efficiency in consumables, drugs, and LOS to reduce losses.
Triangulate	There is no awareness of costs to behave economically to reduce losses.

3.3 Implementation of SOP and Clinical Pathway

The form of commitment to implement the clinical pathway can be seen from the participation of general surgeons in making clinical pathways. Every general surgeon is included in the making of a clinical pathway so that it should be able to hold on to what has been prepared in the implementation of services, but there are still many general surgeons who have not adhered to the clinical pathway that has been prepared with the management of the hospital.

> ... "If for the procedure in the operating room all must be complete from the laboratory results, content photos and all the preoperative preparations are re-checked after we have prepared it in full, for the Appendicitis Reference it is simple, so the operation is very simple
> ... "For operating SOPs there are and sometimes for SOPs that have not been obeyed, because each general surgeon is different
> ... "So the SOP in Budi Kemuliaan Hospital, Batam is not standard because the general surgeon is different, so it is adjusted to the wishes of general surgeons
> ... "Always quality standards for using packages from the Hospital
> ... "For the quality standard is appropriate, but there are still many general surgeons who use consumables as they wish (Main informant 2, Male, 68 years old)

Commitments to implement the clinical pathway have begun with the preparation of the clinical pathway that already exists, and the tariff has been adjusted to *BPJS* in health sector income. From the calculation when preparing the clinical pathway, it was found that there was no loss of costs and that there was a profit even though the value was small. However, this is uncertain because the hospital has not yet made an analysis and made unit costs for the service of patients with guaranteed *BPJS* in health sector. One of the triangulation informants in this variable did not know about the formation of the clinical pathway.

Table 6. Conclusions In-depth interviews about the suitability of Acute Appendicitis treatment with SOP and Clinical Pathway

Informant	Services	Clinical Pathway
Main	The available SOPs have been obeyed	Some general surgeons follow the SOP, and there are also those who use their clinical standards outside the provisions and optionally listed on clinical pathways.
Triangulate	There is but does not affect cost savings	Not yet maximal and there is no punishment for general surgeons who are wasteful of consumables. There is a conflict of interest in decision making related to the punishment and implementation of the director that is structural and functional.

4. Discussion

4.1 Cost awareness

Many general surgeons already knew that the cost of Acute Appendicitis services in patients with BPJS in health sector insurance exceeds the received income from INA-CBGs so that it has the potential to

lose money. Based on Paruntu study in 2012, it was found that the radiographers' knowledge of costs at the sub-radiology of the Navy Hospital Dr. Mintoharjo was sufficient but only limited to any costs incurred because they were not involved in the purchase of health materials [7]. The general surgeons also did not know about the case-mix payment system.

There was no cost awareness behavior from general surgeons that can be seen from the implementation of services that have not been by SOP and clinical pathway. When general surgeons do not comply with SOP, it means that directly, general surgeons do not comply with clinical pathways. General surgeons were involved in the making of clinical pathways, but the implementation was not yet appropriate because the commitment of general surgeons is still low. As a consequence, payment of services for health workers will be reduced, and may not even get payment of services at all. This is because hospitals suffer losses in terms of high maintenance costs but low income because payment is in accordance with the rates set by the *BPJS* in health sector.

Ziba Rechou in 1992 stated that a person who aware of costs would certainly be able to view costs as important, but cost awareness should be reflected in behavior and thoughts [8]. The implementation of Acute Appendicitis services that are not by SOP and clinical pathways occurs because of every doctor both general surgeons who are permanent and those who are guests, especially senior doctors, they work according to their own work experiences.

Some of the components that most often experience incompatibility with clinical pathways were the use of disposable materials such as the use of threads that can be different for each general surgeon. Cheah in 2000 stated that HR commitment was very important for the successful implementation of the clinical pathway as one of the cost control and quality control tools [9]. Spath in 1994 stated that doctor cooperation and acceptance in the implementation of clinical pathways is the key to the successful implementation of clinical pathways [10]. The disobedience of general surgeons to SOP and clinical pathways shows a commitment to implement services by SOP and the clinical pathway was low so it can be concluded that cost awareness of general surgeons was still lacking. Commitments that were included in behavioral or affective commitments relate to the extent to which individuals feel their values and goals are by the values and goals of the organization [11].

4.2 Management monitoring

Management monitoring carried out on the service of Acute Appendicitis patients with *BPJS* in helath sector was by implementing a utilization review and monitoring of hospital income disparity with income from INA-CBGs. Utilization review as a control system was intended so health service delivery could be by the patient's needs, so there will be no fraud from general surgeons by providing excessive health services (overutilization), reducing health services (underutilization), or even providing inappropriate services [12]. The utilization review results in a doctor's report document. There was no reward for general surgeons who have good report document (not overbilling). When the cost of services that carried out by general surgeons overbilling, it will be a report on the JKN team.

Furthermore, the *JKN* team reported to the head of the *JKN* division. Reporting is continued to the head of the medical service, medical committee, and hospital director every once a week. Based on existing reports, the director will call and admonish general surgeons who were overbilling in the service of Acute Appendicitis in patients with *BPJS* in health sector.

Management monitoring only comes to reprimand to general surgeons who were overbilling and have no follow-up. Monitoring is already underway, but it was hampered by the principle of each doctor which was very difficult to change. In this *JKN* era, all services are regulated and limited in funding without reducing service quality. Doctors must be encouraged to make the transition from the absence of economic thinking to the use of economically oriented devices and drugs. Cost considerations in patient care do not have to be seen as decreasing levels of care but as a way to optimize patient care [13].

Monitoring of disparity between hospital income and INA-CBGs income in the TXT data was carried out by managers, that is the head of the *JKN* division with ward visitation. The hospital can estimate the advantages or disadvantages obtained from each operation performed by Acute Appendicitis. The disparity in hospital income and INA-CBGs income cannot yet be guaranteed to loss. Calculations will be more certain and accurate using unit cost calculations. The unit cost will specify

one by one service component, but until now, there has been no unit cost creation. The role of the head of the medical services was still lack of monitoring. The head of the medical services which was also a manager was still limited to receiving reports on the services of doctors who then forward reports to the medical committee and directors. From all reports that have reached the director, there has been no follow-up and only a direct warning that cannot permanently change cost awareness behavior.

4.3 Cost efficiency

The average cost of the components of patients Acute Appendicitis with *BPJS* in health sector in 2018, it was known that cost efficiency was found in the use of disposable materials. Based on the interview results, it showed that disposable materials were more expensive than the INA-CBGs package and its use was not controlled. So, there was appeared an imbalance between the results of interviews with secondary data. Inequality occurs due to incomplete TXT data. The cost component that describes cost inefficiencies was LOS, drug use, and medical support. Walintuka's research in 2018 stated that the biggest negative difference for the case of Appendectomy in Gunung Maria Tomohon Hospital was in the third BPJS in health sector treatment class because of the large number of patients and LOS which tended to be less controlled [14].

The inequality that arises from each component of the service cost of Acute Appendicitis is strengthened by incomplete TXT data. Inputting the hospital billing grouping to the TXT data variable for *BPJS* in health sector patient was feared not yet appropriate because there was no monitoring of the data in TXT. Also, the coders as the *JKN* team were not medical personnel can be biased arose related to medical language. Incomplete data shows that there was a lack of monitoring in-service reporting. All patient data should be inputted and become separate reports. Data was an important component to find out whether the service of Acute Appendicitis was optimal and creates cost efficiency. Data was also used in service evaluations that form the basis of policymaking. The role of the manager must be further enhanced in the monitoring and completeness of data related to services to *BPJS* in health sector patients.

5. Conclusion

Lack of knowledge of health workers about the case-mix payment system that makes awareness behavior low and influences commitment to implement services by SOPs and clinical pathways. This shows that there is still a low cost awareness in the Acute Appendictitis service at Budi Kemuliaan Hospital Batam which ultimately also has an impact on increasing hospital losses. Monitoring was carried out with utilization review, and monitoring disparity cost produces reports to the director, but there has been no follow-up of the results of the report. So that it is necessary to carry out periodic monitoring related to the Cost awareness behavior of health workers who provide services for Acute Appendictitis services as well as other services performed in hospitals. Cost awareness behavior monitoring can encourage hospitals in an effort to control the costs incurred for performing Acute appendicitis surgery.

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Conflict of Interest

We declare that there is no conflict of interest in this article.

REFERENCES

1. Social Security Agency. Peraturan BPJS Kesehatan No.1 Tahun 2014 Tentang Penyelenggaraan Jaminan Kesehatan (BPJS Health Regulation No.1 of 2014 concerning The Implementation of Health Insurance). Jakarta: BPJS. 2014.
2. Tri, PA. Analisis penerapan manajemen pasien. Analisis PKU Muhammadiyah Surakarta Penerapan Manajemen Pasien Saraf dalam Rangka Peningkatan Mutu Pelayanan di Rumah Sakit (Analysis of Application of Patient Management. Analysis of PKU Muhammadiyah Surakarta Application of Management of Nerve Patients to Improve Service Quality in Hospitals). Surakarta: Muhammadiyah University of Surakarta; 2013.
3. Ministry of Health of the Republic of Indonesia. Peraturan Menteri Kesehatan Republik Indonesia Nomor 27 Tahun 2014 Tentang Petunjuk Teknis Sistem Indonesian Case Base Groups (INA-CBGs) (Regulation of the Minister of Health of the Republic of Indonesia Number 27 of 2014 concerning Technical Guidelines for the Indonesian Case Base Groups (INA-CBGs) System). Jakarta: Ministry of Health. 2014.
4. Suhartoyo. Klaim Rumah Sakit Kepada BPJS Kesehatan Berkaitan dengan Rawat Inap dengan Sistem INAâĂŞ CBGs (Claims of the hospital to BPJS health insurance relating to hospitalization with the INA-CBGs system). Adminitrative Law & Governance Journal. 2018;1(1).
5. Hanna P., Subanegara, Modul Cost Containment (Pengendalian Biaya di Rumah Sakit) (Modul of Cost Containment (Cost Control at the Hospital)). (Online). 2010, `https://www.slideshare.net/aak6666/modul-cost-containtment`, accessed on May 24, 2018
6. Allan G.M., Joel L., Natasha W. Physician awareness of drug cost: a systematic review. PloS Medicine. 2007;4(9).
7. Paruntu, S. Analisis Cost Awareness dan Cost Monitoring untuk Efisiensi Biaya Pelayanan di Sub Departemen Radiologi Rumkital Dr. Mintohardjo (Studi Kasus : Pelayanan Thoraks AP/Pa Foto) (Analysis Cost Awareness and Monitoring Cost for Service Cost Efficiency in the Radiology Sub Department of Dr. Mintohardjo (Case Study: Thorax Service AP / Pa Photo)). Jakarta: University of Indonesia; 2012.
8. Rechou, Z. Cost Awareness among Staff Level Hospital Nurse. ProQuest Dissertations and Theses. 1992
9. Cheah, J. Development and Implementation of A Clinical Pathway Program in An Acute Care General Hospital in Singapore. International Journal for Quality in Healthcare. 2000;12(5):403-12.
10. Spath, P.L. Clinical Path: Tools for Outcomes Management. Chicago: American Hospital Publishing. Inc; 1994.
11. Allen, N. J., John P. Meyer. The Measurement and Antecedents of Affective, Continuance, and Normative Commitment to the Organization. Journal of Occupational Psychology. 1990: 1-18.
12. Aden, C. M. Mutu Pelayanan Kesehatan (Quality of Health Service). (Online). 2013, `http://mutupelayanankesehatan.net/index.php/component/content/article/22/835`, accessed on May 24, 2018.
13. Tiong, W.H.C., O'Shaughnessy, M., O; Sullivan, S,. Cost Awareness among doctors in an Irish University-affiliated Teaching Hospital. Clinics and Practice. 2011;1(4).
14. Walintuka, H.C., S.L.H.V. Joyce L., Jimmy P. Analisia Perbedaan Pendapatan Riil dengan Pendapatan INA-CBGs Pasien Bedah Badan Penyelenggara Jaminan Sosial (BPJS) Kesehatan di Rumah Sakit Gunung Maria Tomohon (Analysis of the differences of real income with income of INA-CBGs on patients surgery with BPJS health insurance at Gunung Maria Tomohon Hospital). Community Health. 2018;2(4).

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