

Comparative Analysis between Real Cost and INA-CBG's claims of Service Costs in Chronic Kidney Disease Patients with Hemodialysis

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ABSTRACT

Chronic Kidney Disease (CKD) is prevalent among the global population, particularly with people with non-communicable diseases, such as diabetes mellitus, hypertension, and other degenerative diseases. CKD is notably associated with poor prognosis. Indonesia national insurance, called BPJS, has ranked CKD treatment regimens as the second most expensive claim. In fact, there is a discrepancy between hospital tariffs and INA-CBGs claims (listing of claims released by BPJS); thus, several disadvantages to the hospital continuity are inevitable. The study aimed to determine the unit costs of the management for the care of CKD patients with hemodialysis based on real cost (hospital tariffs) and INA-CBGs claims. This study was an observational analytic study conducted in the Hemodialysis unit of Zainal Abidin Hospital (RSUDZA), Banda Aceh, Indonesia. Data collection was carried out by taking secondary data from CKD patient visits in January-December 2019. The study population was all CKD patients in the registry of 2019 in the hospital, with a total of 406 patients enrolled. The highest unit cost of care based on real costs was the cost of surgical procedures, and the cost difference between INA-CBG's and hospital tariffs in the treatment of patients with CKD is significantly different (p-value = 0.014, with gap difference of IDR 2,146,086). It is suggested an urgent evaluation and scrutinization for the management of CKD patients with hemodialysis to prevent the different treatment costs in the service.

Keywords : INA-CBG's, Real Cost, Chronic Kidney Disease

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BACKGROUND

The enactment of UU No. 24 of 2011 concerning BPJS (National Insurance Company) in January 2014 has urged the implementation of the financing system performed following INA-CBGs, which require the government to immediately open service packages for specific cases or diseases among insurance (BPJS). National Health Insurance scheme, so-called JKN (Jaminan Kesehatan Nasional), utilizes INA-CBG's claim method which defined as the payment method that is carried out on known-cost of health service, prior this method capitation and case-based payment (case mix) has been applied for the insurance scheme. INA-CBGs will use diagnosis stratification and procedure in accordance with clinical characteristics, resource utilization, or treatment cost (Kemenkes RI, 2016; Presiden RI, 2011).

CKD is a long-life and global public health problem; it gains attention because there was an increase CKD prevalence in the last decades, poor prognosis, and high cost of treatment (Glasscock et al., 2017). Global Burden of Disease stated that CKD as the 27th rank cause of death in 1990, but it increased to 18th rank in 2010. Meanwhile, the whole management of CKD patients was ranked as the second most expensive cost-related treatment (IRR, 2018; PUSDATIN, 2017). Based on the Ministry of Health rules No.812 of 2010 about the Dialysis Services in Health Care Facilities, dialysis is a medical procedure that provides kidney care assistance for optimal health care, consisting of peritoneal dialysis and hemodialysis (RI Ministry of Health, 2010). BPJS Health documents through CNBC Indonesia have recorded treatment cost for chronic kidney disease was about 2.3 trillion in 2018, and the first trimester of 2019 (January-March) has noted a rapid increase reaching IDR. 672 million; these trends continue to increase monthly (CNBC INDONESIA, 2019). In 2015, a total of IDR. 2.68 trillion was spent on CKD, both in inpatient and outpatient, an increase from 2014, which was 2.2 trillion rupiahs (PUSDATIN, 2017). Research conducted at Banda Aceh Regional Hospital discovered the total hospital costs incurred for inpatient assistance in the Medical Staff Group was -30.7% of the costs required by BPJS (Harnold, S. P., Zulfakar, & Sovia, C. N., 2017).

In this study, a cost analysis will be carried out to determine the differences and the average costs required for the treatment of CKD patients with hemodialysis based on the INA-CBGs grouping demonstrated from the perspective of the hospital as well as the cost components associated with hospital tariffs for CKD patients with hemodialysis in RSUDZA.

METHOD**Study Design**

This was an analytic cross-sectional study. The observation would measure cost variables in the comparison between real costs / hospital tariffs and INA-CBG's claim for the management of CKD patients with hemodialysis without administering intervention to patients in the Regional Hospital of Zainal Abidin (RSUDZA), Banda Aceh, Indonesia, in January-February 2020.

Data Collection and Patients

The study population enrolled all chronic kidney disease patients with hemodialysis treated in the Hemodialysis installation of the hospital during a one-year period of 2019. The total sampling technique was applied in the study with 406 patients visiting the installation regularly. There were several inclusion criteria, such as inpatient CKD

patients, using BPJS as insurance, completed medical record, financial data, medication, and claims. Real cost/hospital tariffs were collected through direct inspection to the hospital management consisting of cost component (hemodialysis cost, supportive medical procedure, blood service, laboratory examination, radiological examination, nursing, medication, disposable usage, and the other health tools. Meanwhile, INA-CBG's claims were examined in accordance to the Ministry of Health rules (PERMENKES) No.59 of 2014. All unit costs were analyzed in local currency (Rupiah).

Data Analyses and Ethics

Demographic characteristics, such as age, length of stay (days), hospital care class and comorbidities were analyzed in frequency distribution. To compare the cost difference between hospital tariff and INA CBG's, the study used Mann-Whitney test, because data was not normally distributed. Data was analyzed using SPSS (Statistical Package for Social Science). The ethical clearance was obtained from the Health Research Ethics Commission, Faculty of Medicine, Universitas Syiah Kuala, and Regional Hospital of Zainal Abidin with reference number: RSUDZA No.092 / EA / FK-RSUDZA/ 2020 on June 19, 2020.

RESULT

It was demonstrated that the age mean of patients was 40-60 years old, which was more predominant for males with a percentage of 55.4%. Most patients were treated in class 3 of hospitalization wards (78.1%), with the average of ≤ 7 days of treatment. Anemia, other unclassified diseases, and pulmonary edema became the most common comorbidities found among CKD patients in the study, consisting of 172, 116, and 49 patients, respectively. The general characteristics of patients enrolled in the study was detailed in Table 1. The result also shows that surgical procedure tariffs are the highest average costs among patients compared to the other groups of medical procedures or indicators (average cost for the surgical procedure was IDR 3,153,259) (Table 2). The average of INA-CBG tariff was IDR 8,227,100, and real costs/ hospital tariffs was IDR 10,373,186. Hospital tariff was higher than the INA-CBG's tariffs, with a gap difference of IDR 2,146,086. Statistically, there is a significant difference between INA-CBG rates and hospital rates in the care of patients with chronic kidney failure who had hemodialysis (p-value = 0.014) (Table 3).

DISCUSSION

The study found that the average age of patients with CKD who performed hemodialysis at the installation in the period of January- December 2019 was 51.90 years of age. This clinical condition is associated with the attenuation of kidney function among elderly (Abdulkader et al., 2017). There is a progressive reduction in Glomerular Filtration Rate (GFR) and Renal Blood Flow (RBF), around 8 ml/min / 1.73m^2 per decade starting at the age of 40 years (Aisara et al., T.t.). Kasriani demonstrated that the 40-64 age groups as the most suffered population with CKD; there was a total of 53 patients (60.2%) in the age of 40-64 years. Indonesia Renal Registry (IRR) 2017 also stated similar facts that the highest proportion of patients in the category of 45-64 years accounts for 59.15% with CKD (IRR, 2018; Kasriani, 2016). In the gender aspects, male patients were still predominant among patients in the study, it included 225 male patients (55.4%), while women with a total of 181 patients (46.6%). The study by Roderick et al. (2011) in the United Kingdom discovered that the prevalence of CKD in the stage of 1-5

was 14% among male patients and 13% in women. Similarly, in the IRRs, CKDs have a similar pattern of patients, male patients were more dominant (57%) than female patients (43%) (IRR, 2018; Roderick et al., 2011).

The hospital care class of patients was mostly in third hospitalization wards, with a percentage of 78.1%, and the average length of stay (days) was of 9.57 days of treatment. The national insurance company (BPJS), had the scheme where people with lower income will have the premi paid by the government, which is used to be called Aceh Health Insurance (JKA). This is the program is granted from the local government for providing a better in health services for the people of Aceh as part of universal health coverage. Aceh Health Insurance becomes the groundbreaking tools to provide universal health coverage in the region with financing system mimicking the BPJS system in which all Acehnese automatically stated as the Recipient of Assistance or 'Penerima Bantuan Iuran (PBI)' that previously regulated by the national rules in class 3 of treatment (PERGUB ACEH, 2018). All patients with premi paid by the government entitled for third class hospital care.

There were 66% of hemodialysis patients in the study had several comorbidities. It is stated in the theoretical background that various comorbidities will worsen the condition of hemodialysis patients and have an impact on accelerating mortality in the patient group (Utami et al., T.t.; McArthur et al., 2018). Anemia, other diseases, and pulmonary edema were the most common comorbidities in patients with chronic kidney failure. IRR was also mentioned that more than 87,000 patients with CKD have suffered from several complications of the CKD development per se; there were 78% patients with Hb <10gr / dl and only 22% of patients with Hb > 10 gr/dl. In a recent study, Zadeh et al. also concluded that complication frequently occurs anemia among patients with chronic kidney failure. In another study, anemia was always accompanied by CKD patients (80-95%) but not predominantly found among patients with chronic kidney failure due to polycystic kidney (Yulianto et al., 2017). Meanwhile, Pradesya's study demonstrated that there was a significant relationship between chronic kidney disease and pulmonary edema, with a percentage of 82.6% in 69 patients (Pradesya, t.t.). CKD patients have low immunity that tends to be more prone to infections such as pneumonia, urinary tract infection (UTI), and sepsis (Tecklenborg et al., 2018). This study found that 47 patients (11.6%) had pneumonia. Bacterial pneumonia is a type of pneumonia that is more often experienced by patients with CKD. About 79% of CKD patients infected with pneumonia need to be hospitalized with a mortality of 33% (Rosyid & Thaha, t.t. ; Viasus et al., 2011)

Additionally, some patients experienced hypertension and diabetes mellitus in this study, 48 and 28 patients, respectively. Nearly 30% of CKD is caused by hypertension, and the prevalence of hypertension in newly diagnosed CKD is more than 85% (Aisara et al., T.t.). Maria et al. described comorbidities among CKD patients with hemodialysis patients in the Hemodialysis Unit of PKU Muhammadiyah Hospital, Yogyakarta, in which there were 69 patients (87.3%) had hypertension, 59 patients (74.7%) had diabetes mellitus. Diabetes mellitus is the cause of ESRD, as well as the common comorbidities of patients with ESRD (Shen et al., 2017). In this study, there were only seven patients (11.6%) diagnosed with cardiovascular disease. This still needs attention because several studies explain the increasing morbidity and mortality rates in CKD patients was demonstrated mainly of patients with cardiovascular disease, including coronary heart disease. A study conducted by Goodkin that patients with chronic renal failure who have comorbid coronary heart disease have a significant relationship with the mortality among

CKD patients with hemodialysis (p-value <0,0001) (Goodkin, 2003). Conversely, patients without comorbidities of heart disease are likely to have a good quality of life, 2.770 times compared to patients with heart diseases (Utami et al., T.t.).

Unit cost for the care of CKD patients was discovered that with the highest mean of cost is the surgical procedure rate (IDR. 3,153,259). There was a wide variety of surgical procedure that has been conducted for the CKD patients in the hospital, one the most frequent procedure is vascular surgery (establishing fistula arteriovenous (FAV) or AV Shunt). The increasing number of new patients undergoing hemodialysis each year will also considerably raise the costs of vascular surgical procedures. Besides vascular access in patients with CKD, it is also possible that the patient experience many types of malignant complications, such as infection that is not very uncommon to repair the vascular access (Almasri et al., 2016). Based on the Mann Whitney test, it was found that the INA-CBG rate had an average of IDR. 8,227,100 and a real costs/ hospital tariff of Rp10,373,186. Hospital rates are greater than the INA-CBG rates with a difference in IDR. 2,146,086. Statistically, there is a significant difference between INA-CBG rates and hospital rates in the care of patients with chronic kidney failure (p-value = 0.014).

Kasriani et al. concluded that a significant or the biggest difference was in stage II of the severity level of IDR. 52,648,165 among class III of insurance groups. Azalea et al. mentioned that there were differences between hospital rates and INA-CBG's claims in some of the studies' disease groups. The considerable gap difference in hospital tariffs with INA-CBGs during September 2014 - August 2015 accounts for IDR. 225,632,939.96 (29.47% of total costs), which became the burden for hospital costs in the 47 episodes of hospitalization (Azalea, M., Andayani, T. M., & Satibi., 2016; Kasriani, 2016). The occurrence of the discrepancy between real cost/hospital tariffs and INA-CBG's claim does not only occur in CKD patients undergoing hemodialysis. Lilissuriani et al. found a significant difference in the real cost of hospitals with INA-CBG's claim among coronary heart disease patients, as indicated by a p-value of 0.001. The difference between hospital tariffs with INA-CBG is IDR.532,954,324 or -27% of the INA-CBG's tariff. Prabowo et al. showed that there was a comparison of the real cost with INA-CBG rates for inpatients of IDR. 1,1408,100 and outpatients for IDR.-854,200 among hypertensive patients (Prabowo, Wisnu, 2018; Saputra, t.t.)

CONCLUSIONS

There is a difference between the real costs / hospital tariffs and INA-CBG's claim in CKD patients with hemodialysis at RSUDZA, in which real costs were greater than the INA-CBG's tariffs with an average difference of IDR. 2,146,086. The management of hospitals needs to conduct an evaluation and review of service standards and management of inpatient CKD patients with hemodialysis according to the case; thus, the cost discrepancy could be minimized preventing the financial risk for the hospital per se

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