ACFE
Association of Certified Fraud Examiners
Indonesia Chapter #111

DOES MORAL HAZARD OCCOUR IN THE IMPLEMENTATION OF SOCIAL HEALTH INSURANCE? EVIDENCE FROM PUBLIC HOSPITALS IN A RURAL PROVINCE OF INDONESIA[1]

[✉][1]Rizanda Machmud, [1]Syafrawati, [2,3]Syed Mohamed Aljunid, [1]Rima Semiarty
[1]Andalas University, Indonesia
[2]National University of Malaysia, Malaysia
[3]Kuwait University, Kuwait

ABTRACT

Indonesia is now encountering moral hazard problems in the implementation of social health insurance. BPJS, as the administrator of Indonesia's National Health Insurance, reported that there was an increase in deficit in the 4 years of the implementation of National Health Insurance from US$ 228 million in 2014 to US$ 470 million in 2016. Despite efforts conducted to overcome the problem, no evidence-based predictor that might be significantly associated with moral hazard in a rural province hospital in Indonesia. The purpose of this research is to identify the incidence of moral hazard in the implementation of National Health Insurance in Indonesia. Data consisting of 180 medical records obtained from three public hospitals in rural province of Indonesia were selected as samples in this study. These medical records were reviewed by Independent Senior Coder (ISC) who had more than 5 years experiences as a coder. The indicators of moral hazard in this study were upcoding, readmission, and possible unnecessary admission. Logistic regression was used to explore determinant of moral hazard from patient, coder, and physician side. The results show that rate of moral hazard cases for upcoding is 10%, readmission is 2.8%, and possible unnecessary admission is 18.9%. It can be seen from multivariate analysis that discharge status, severity level and LOS have a significant relationship with moral hazard. Illness severity level, Discharge against Medical Advice, and higher Length of Stay are risk factors for moral hazard incidence.

Keywords: Moral Hazard, Upcoding, Readmission, Unnecessary Admission

1. INTRODUCTION

Universal Health Coverage is defined as a system that ensures that all people can use the promotive, preventive, curative, and rehabilitative health services they need with good quality and there are no financial difficulties in obtaining the health services. Related to Universal Health Coverage, WHO constitution of 1948 states that health is a human right contained in the agenda of Health For All established by the Alma-Ata declaration in 1978 (WHO, 2015).

The Government of Indonesia through Law No. 40 of 2004 has begun the first step to guarantee the health of every population by implementing the National Social Insurance System (SJSN) where one of

the insurances received by the population is health insurance. Health insurance is organized with the aim of ensuring that participants benefit from health care and protection in meeting basic health needs. Furthermore, the government had determined that on January 1, 2019, all Indonesians would have participated in the National Health Insurance (JKN) to achieve universal coverage (Ministry of Health, 2004).

However, the implementation of the National Health Insurance (JKN) program which was started on January 1, 2014 has always experienced a financial deficit from year to year. BPJS Health data states that in 2014 the BPJS Health deficit was IDR 3.3 trillion, in 2015 was IDR 5.7 trillion, in 2016 was IDR 6.8 trillion (BPJS, 2016a). Such a deficit occurs because the amount of revenue is smaller than the expenditure (BPJS, 2016a). One possible cause of National Health Insurance fund losses is moral hazard which includes fraud. (BPJS, 2016b).

Based on the systematic review of Pongpirul & Robinson (2013), actors who can manipulate the DRG system in hospitals are hospital management, doctors, and coders. But until now there has been no research on the involvement of doctors, coders and patients with moral hazard in hospitals. This study aims to determine the type of moral hazard and its relation to the characteristics of doctors, coders, and patients.

2. METHODS

The research design used is a cross sectional study. The dependent variable in this study is moral hazard, including upcoding, readmission, and possible unnecessary admission.

Upcoding is a mismatch between the diagnosis code and the procedure written in the medical record and those claimed to BPJS resulting in an increase in the price of claims. The detection of upcoding is done by writing diagnosis codes and procedures written by the coders. This code will be matched with the procedure and diagnosis code made by independent reviewers based on a review of the overall medical record. If when included in the INA-CBGs software there are differences in the number of claims, where the number of claims from the coder is higher than the code found by an independent reviewer, the medical record is classified as upcoding. Readmission is a patient service event where the same inpatients are excluded and re-admitted to inpatients to undergo the same disease treatment after a period of less than 30 days (Catlin et al., 2008, Hosseinzadeh et al., 2013). Detection of readmission can be done by filling out the same diagnosis data in the past month, which is classified as inpatient cases. So if in the past month there was a disease similar to the case under study, in which the patient was also treated, then the case was classified as a readmission. Possible unnecessary admission is an unnecessary inpatient case, where there is no reason for patients to be treated when they first enter the hospital. How to detect possible unnecessary admission is by looking at the length of stay and return status. If the length of stay is one day (LOS = 1) and the patient's discharge status is not dead, it can be categorized as unnecessary admission.

The independent variables in this study are the characteristics of the coder, the clinician, the patient, and the hospital which include the age of the clinician, the gender of the clinician, the specialization of the clinician, the age of the coder, the gender of the coder, the level of education of the coder, the number of certificates obtained by the coder, the coder work experience, the age of the patient, birth weight, length of stay, return status, and the seriousness of the patient's illness

The population in this study is the medical record of inpatients in government-owned C-class hospitals in West Sumatra. C-class hospitals in West Sumatra were selected because based on preliminary studies and journal studies, C-class hospitals have the potential to have moral hazard events (Ade et al., 2016).

The minimum sample size obtained

is 180 inpatient medical records. The sampling method is cluster random sampling method. In this study 3 (three) C-class hospitals in West Sumatra are selected. The number of samples is evenly distributed among the three hospitals. With a total sample of 180 medical records, 180/3 of each hospital will be taken, or 60 medical records. Of the 60 medical records of the patients are subdivided based on four major groups of cases of illness in INA-CBG namely surgical inpatient cases (group 1), non-procedure inpatient cases (group 4), obstetric inpatient cases (group 6) and neonatal inpatient cases. The number of medical records taken for each case is 60 medical records divided by 4, which is 15 medical records per case.

The types of data in this study are primary data and secondary data. Primary data is obtained from questionnaires by interviewing coders, while secondary data is obtained from patient medical record files.

3. RESULT AND DISCUSSION

Based on table 1 it is known that the most type of moral hazard is possible unnecessary admission (18.9%), followed by upcoding (10%), then readmission (2.8%).

As shown in table 2, the average age of the doctor is 38.65 years, meaning that it is at a young age. It is almost the same as the average age of the coders, which is 35.96 years. While the average age of patients is 26.03 years. Length of stay is in the range of 4 days.

In table 3, it can be seen that most of the doctors in this study are female, with the most specialization being obgyn (32.8%). Two-thirds (66.7%) of the coders have work experience of more than four years. One-third of the coders have never attended INA CBG coding training, and one-third of the coders have attended training three times since the implementation of National Health Insurance (JKN) in 2014. Most patients (71.1%) are female, with discharge status dominated by returning home (92.8%). In infants, most of them do not experience BBLR (82.2%).

Table 1. **Hazard Moral Frequency Distribution**

Dependent Variable		F	%
Up Coding	Up Coding	18	10
	No *Coding*	162	90
Readmission	Readmission	5	2,8
	No *Readmission*	175	97,2
	Possible Unnecessary Admission	34	18,9
	No *Possible Unnecessary Admission*	146	81,1
Total		180	100

Source: Primary Data

Table 2. **Characteristics of Doctors, Coder and Patients (Numerical Data)**

Variable	Mean(±SD)	Median	Max	Min
Age of the clinician	38.65 (±5.706)	37	54	32
Age of the coder	35.96 (±3.326)	35	40	32
Age of the patient	26.03 (±22.092)	24.50	86	0
(year)	4.19 (±2.214)	4	20	1
LOS				

Source: Primary Data

Table 3. **Characteristics of Doctors, Coders and Patients (Categorical Data)**

Variable	F	%
The clinician		
Gender of the clinician		
Male	120	66.7
Female	60	33.3
Specialization of the clinician		
Surgery	41	22.8
Medical (Internal Medicine, Ophtalmology, Cardiology, ENT (Ear, Nose and Troat), Pulmonology	28	15.6
Obgyn	59	32.8
Peadiatric	52	28.9
Coder		
Coder's Work Experience		
< 4 years	60	33.3
≥ 4 years	120	66.7
Number of trainings attended		
0	60	33.3
1	60	33.3
3	60	33.3
Patient		
Gender of the patient		
Male	52	28.9
Female	128	71.1
Patient Discharge Status		
Discharged to home / get well	167	92.8
Discharged / Transferred to another facility	5	2.8
Discharged / Forced home	4	2.2
Discharged / Died	4	2.2
Low birth weight		
Yes	8	17.8
No	37	82.2
Illness severity level		
I	131	72,8
II	34	18,9
III	15	8,3
Total	180	100

Source: Primary Data

Factors Influencing Moral Hazard

As seen in tables 5 and 6, in processing bivariate data, variables that have a significant relationship with the occurrence of moral hazard are Length of Stay (p = 0.000), coder's work experience (p = 0.001), number of training attended (p = 0.001) and illness severity level (p = 0.018).

After processing multivariate data (table 6), it is found that the variables that have a significant relationship with moral hazard variable are patient's disease severity level, patient discharge status and LOS. Moral hazard opportunities based on the patient's illness severity level are between severity level 1 and 3 (POR

7.863) where patients with severity level 1 are more likely to get moral hazard 7.863 times compared to patients with severity level 3. Chance of moral hazard incident based on the patient discharge status is between the forced home status and discharged to home get well (POR 61.006) where the chances of patients for forced home get moral hazard 61.004 times of the patients who discharged to home get well. The higher the LOS, the higher the moral hazard incident will be. (POR 45.27)

DISCUSSION

In this study it is known that almost one third of medical records contain moral hazard. The highest moral hazard is unnecessary admission (18.9%) and the lowest is readmission (2.8%).

Upcoding cases in this study are found to be higher in percentage than the research in Germany and Australia. In Germany, upcoding occurred in 1% of inpatient payments (Lungen and Lauterbach, 2000), whereas in Australia, coding audits conducted in 1995-1996 showed that medical records containing upcoding were 5.2% while down coding was 6.5% (Victoria State Government, 1997).

In this study, the hospitals taken as the sample are C-class regional government hospitals. Both central and regional government hospitals are a form of Public Service Agency (BLU). Public Service Agency (BLU)) is an institution within the Government that is formed to provide services to the community in the form of the supply of goods and / or services sold without prioritizing profit seeking and in carrying out its activities it is based on the principles of efficiency and productivity (RI, 2004). So the hospital, as part of the Public Service Agency (BLU), operates without prioritizing profit seeking. This contrasts with upcoding behavior, where the goal to be achieved is profit seeking. This means that there are other factors that lead to cases of upcoding in the hospital under study other than the factor of seeking profit.

The upcoding incident is often identified with the role of the coder because the coder is the person who enters diagnostic codes and procedures into the INA CBG software. The results of this study illustrate that in the characteristics of the coders there is a significant relationship between work experience and moral

Table 4. **Moral Hazard based on the Characteristics of Doctors, Coders and Patients (Mann Whitney Test)**

Variable	Moral Hazard	N	Mean	SD	*P* value
Age of the patient (in year)	Moral Hazard	53	21.15	19,228	0.088*
	No *Moral Hazard*	127	28.06	22.947	
Age of the patient (in day)	Moral Hazard	53	7993.38	7273.562	0.124*
	No *Moral Hazard*	127	1.03E4	8411.798	
Age of the clinician	Moral Hazard	53	37.58	5.224	0.069*
	No *Moral Hazard*	127	39.09	5.857	
Age of the coder	Moral Hazard	53	35.04	3.573	0.014*
	No *Moral Hazard*	127	36.34	3,153	
LOS	Moral Hazard	53	2.68	1.221	0.000*
	No *Moral Hazard*	127	4.82	2.234	

*Mann Whitney Test
Source: Primary Data

Table 5. **Moral Hazard based on the characteristics of doctors, coders, and patients (Chi-square)**

Variable	Total Cases	*Moral Hazard* (%)	Chi square	OR (95% CI)	*P* value
Clinician					
Gender of the clinician	120	40 (33.3)	2.089	1.808	0.148
Male	60	13 (21.7)		(0,878 – 3,721)	
Female					
Specialization of the clinician			4.057		0.255
Surgery	38	10 (26.3)			
Medical	31	5 (16.1)			
Obgyn	59	20 (33.9)			
Paediatric	52	18 (34.6)		3.325	0.001
Coder				(1.698- 6.510)	
Coder's work experience			11.636		
< 4 years	60	28 (46.7)			
≥ 4 years	120	25 (20.8)			
Number of trainings attended			14.815		0.001
0	60	9 (15)			
1	60	28 (46.7)			
3	60	16 (26.7)			
Patient					
Gender of the patient			0.184	1,241	0.668
Male	52	17 (32.7)		(0.619-2.489)	
Female	128	36 (28.1)			
Low birth weight			0.000	0.880	1.000
Yes	8	3 (37.5)		(0.182 – 4.250)	
No	37	15 (40.5)			
Patient discharge status			6.121		0.106
Discharged to home / get well	187	49 (29,3)			
Discharged / Transferred to another facility	5	0			
Discharged / Forced home	4	1 (25)			
Discharged / Died	4	3 (75)			
Illness severity level			8.051		0.018
I	131	46 (35.1)			
II	34	6 (17.6)			
III	15	1 (6.7)			

Source: Primary Data

hazard. Moral hazard is more common in coders with work experience of less than 4 years (p = 0.001). It can be concluded that coders with less work experience will cause an increase in upcoding in hospitals.

The readmission incident in this study is found in 5/180 medical records (2.8%). This figure is lower than the figure found in the United States in 2004 where almost 20% of Medicare beneficiaries who

were discharged from hospitals had been contacted again within 30 days (Niu, 2013). The readmission incident is found more in geriatric patients, mostly due to heart failure and chronic obstructive pulmonary disease (Hernandez et al, 2010).

In this study, the readmission incident is found two cases in the Newborn & Neonates Group, one case each in the Cardiovascular System Group, Digestive System Group, and Female Reproductive System Group. There are not many cases of pediatric patients with complaints of heart failure and COPD making the number of readmission found in this study also low. In addition, the low incidence of readmission is also caused by the existence of BPJS control to prevent the occurrence of readmission. In the BPJS Health regulations, a health service is classified as readmission if the same inpatient is admitted to the hospital with the same diagnosis within a period of seven days. If a readmission case occurs at a hospital, the BPJS Health will not process the claims submitted. Although the definition of readmission in this study is different from the understanding of readmission in BPJS Health which is 30 days, the readmission rate is still not high found. The readmission itself in the regulation of the Minister of Health in Indonesia is included in the act of fraud (Ministry of Health, 2015).

The occurrence of possible unnecessary admission is the highest type of moral hazard found in this study, or 34/180 medical records (18.9%). The results of this study are higher than those found in the study conducted by Kusserow et al (1988) who found 10.5% unnecessary admission, and Frederic (1971) who found 2.5% of unnecessary admission cases in pediatric hospitals (Kusserow, 1988, Frederick et al., 1971).

In this study the cases that contain the most unnecessary admission are casemix main group P (Newborns & Neonates Group) 15/180 (8.3%) and the lowest group L (skin, subcutaneous tissue & breast groups). The results of this study differ from the results of the study conducted by Kosserow (1988) that the most unnecessary admission cases are DRG 68 (upper respiratory tract infections, patient over age 69), DRG 183 (digestive disorder, patients aged 18-69), DRG 239 (bone cancer), DRG 243 (medical back problems), and DRG 294 (diabetes, patients over age 35). (Kusserow, 1988).

This unnecessary hospitalization incident needs to be evaluated more deeply to answer the question whether it is really necessary for the patient to be hospitalized or just to be treated as an outpatient. In the research conducted by Kusserow (1988), it was found that 77.8 cases of unnecessary

Table 6. **Multivariate Regression Analysis of Factors Affecting Moral Hazard**

Variable	B	SE	P value	Wald	OR	95 % C.I.for EXP (B)
Patient's disease severity level						
Severity Level 1	2.062	1.213	0.089	2.891	7.863	0.73-84.716
Severity Level 2	1.069	1.322	0.419	0.654	2.913	0.218-38.868
Severity Level 3					1	
Patient discharge status						
Transferred to another facility	-17.995	14852.071	0.999	0.000	0.000	
Forced home	4.111	17.14	0.016	5.751	61.004	2.120-1755.854
Died	2.472	1.455	0.089	2.888	11.852	0.684-205.255
Discharged home / get well					1	
LOS	1.510	0.248	0.000	37.006	45.27	2.783-7.364

Source: Primary Data

admission should be done in outpatient services (Kusserow 1988).

Based on the multivariate analysis, it is found that the variables that have a significant relationship with the moral hazard variable are the patient's illness severity level, patient's discharge status, and LOS. Moral hazard is more likely to occur at Severity level 1, forced return status, and high LOS.

The results of this study differ from the results of research conducted by Syafrawati (2018) in 6 hospitals in West Sumatra where doctors' age, physician specialization, length of work of the coders, and LOS are the most influential factors in the occurrence of moral hazard (Syafrawati, 2018).

The results of this study can explain that possibly the patients with high LOS apply forced home due to prolonged hospital stay. Possible moral hazard that applies in this case is readmission, where the patient is forced to go back to the hospital because the condition has not been fully healed in the previous treatment. Another possibility is the occurrence of upcoding where patient care has not yet been completed but the file at the hospital must be completed so that there may be incomplete files that support the diagnosis, resulting in upcoding. Moral hazard is more likely to occur at Severity level 1 because the high possible unnecessary admission incident in this study is related to the low length of stay ie 1 and 2 days. In cases of severity level 1, this means that the severity of the patient's disease is low, and the patient is treated with a short period of time.

4. CONCLUSION

In this study, it is found that the highest moral hazard incident is possible unnecessary admission, followed by upcoding, and readmission. Factors that are significantly related to moral hazard are patient discharge status, disease severity, and LOS. Patients with severity disease level 1, the status of forced home, and have a high length of stay are more likely to experience moral hazard.

It is, therefore, recommended that the hospitals review possible unnecessary admission cases to ensure that only eligible cases are recommended for hospitalization. The cases that are indicated only require one day of hospitalization should be an outpatient case. In addition, BPJS Health is expected to conduct more audits of high LOS and forced home status

REFERENCES

Ade, S. E. P., Defriman, D., Vivi, T. & Syafrawati 2016. Analisis Tingkat Utilisasi Dan Potensi Masalah Pembiayaan Penyakit Kardiovaskuler Peserta Bpjs Kesehatan Serta Tantangan Bagi Pengembangan Program Pencegahan Di Tingkat Kabupaten/ Kota, Provinsi Sumatera Barat. Padang: Fakultas Kesehatan Masyarakat, Bpjs Kesehatan.

BPJS 2016a. Laporan Pengelolaan Program Tahun 2016 Dan Laporan Keuangan 2016 (Auditan).

BPJS 2016b. Mewaspadai Potensi Kecurangan (Fraud) Dalam Pelaksanaan Jkn-Kis. 41 Ed.: Bpjs Kesehatan.

Catlin, A., Cowan, C., Hartman, M., Heffler, S. & Team, N. H. E. A. 2008. National Health Spending In 2006: A Year Of Change For Prescription Drugs. *Health Affairs,* 27**,** 14-29.

Frederick, Jr, L., Carper, J. M., A, C., Janeway & Kosa, J. 1971. Unnecessary And Preventable Hospitalizations : Report On An Internal Audit 79.

Hernandez, A.; Greiner, M.; And Fonarow, G. 2010. Relationship Between Early Physician Follow-Up And 30-Day Readmission Among Medicare Beneficiaries Hospitalized For Heart Failure. Jama 303(17):1716–1722.

Kemenkes, R. 2004. Uu No. 40 Tahun 2004. Jakarta.

Kemenkes Ri 2015. Pmk No. 36 Tahun 2015 Tentang Pencegahan Kecurangan (Fraud) Dalam Pelaksanaan Program Jaminan Kesehatan Pada Sistem Jaminan Sosial Nasional. *In:* Ri, K. K. (Ed.). Jakarta: Kementerian Kesehatan RI.

Kemenkes Ri 2016a. *Petunjuk Teknis Aplikasi Ina-Cbg V5 Kementerian Kesehatan Republik Indonesia Pusat Pembiayaan Dan Jaminan Kesehatan National Casemix Center,* Jakarta, Kemenkes RI.

Kemenkes Ri 2016b. Pmk No. 76 Tahun 2016 Tentang Pedoman Indonesian Case Base Groups (Ina-Cbg) Dalam Pelaksanaan Jaminan Kesehatan Nasional. *In:* Ri, K. K. (Ed.). Jakarta: Kementerian Kesehatan RI.

Kusserow, R. P. 1988. National Drg Validation Study Unnecessary Admissions To Hospital.

Lungen, M. & Lauterbach, K. 2000. Upcoding--A Risk For The Use Of Diagnosis Related Group. *Dtsch Med Wochenschr,* 125**,** 852-6.

Niu, Y. 2013. Regression Models For Readmission Prediction Using Electronic Medical Records.

Pongpirul, K. & Robinson, C. 2013. Hospital Manipulations In The Drg System: A Systematic Scoping Review. *Asian Biomedicine,* 7, 301-10.

Republik Indonesia .2004. Undang Undang Republik Indonesia Nomor 1 Tahun 2004 Tentang Perbendaharaan Negara.

Syafrawati 2018. Laporan Disertasi. Fakultas Kedokteran Universitas Andalas. Padang

Victoria State Government 1997. Victoria, Public Hospitals, Policy And Funding Guidelines 1997-1998. Melbourne: Victoria State Government Departement Of Health.

WHO 2015. What Is Universal Coverage?