Measuring the extent of fraudulent-risky benefit claims in PhilHealth

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ABSTRACT

In 2015, PhilHealth estimated that a total of PhP 2 billion was made in improper payments to potentially fraudulent benefit claims. This study aimed to determine the extent of fraud in payments made by PhilHealth for benefit claims and to map out areas in PhilHealth claims processing system where fraud is highly susceptible to be committed. This study utilized a mixed-method design. Fraud risk factors and fraud risk index were determined through literature review, key informant interviews, focus group discussions, and records review; these were validated through a series of round table discussions with personnel from relevant PhilHealth departments. Benefit claims applications in general start in the accredited health facility. Each health facility then submits the accomplished benefit claims application forms to the corresponding PhilHealth Regional Offices (PROs). PROs then evaluate the claims and release the reimbursements for the claims, when approved. In 2016, PHIC shifted from manual to electronic processing of benefit claims to simplify and lessen the turnaround time of the process. Specific health care facilities, health care professionals, and illness types were identified as fraud risk factors. Review of 4,413 doubtful claims from PhilHealth's Fact-Finding Investigation and Enforcement Department from 2010 to 2018 showed that eight health care facilities were continually investigated from 2014 to 2015. Also, two medical doctors would be investigated for more than one year and more than one instance per year for doubtful claims. Top illness types of doubtful claims vary per year. Application of the identified factors associated with suspicion of fraud to 2015, 2016, 2017, and 2018 claims datasets yielded an annual fraud index from 0 to 127.70 points. Based on fraud risk points and fraud risk categories, the estimated peso value for all years of none to low-risk claims was higher than 85% of the total reimbursed value. On the other hand, the estimated peso value of claims with moderate to high risk was 14.42% in 2015 and dropped to less than 4% for 2016 and 2017, and then climbed up to 7.9% in 2018. System support for fraud detection may enhance the effectiveness of fraud prevention. The new subsystems may include an automated Relative Size Factor (RSF) test, Same-Same-Same (SSS) test, Same-Same-Different (SSD) test, identification of admissions beyond maximum bed capacity, and training and use of checklist on the fraud-related component of Clinical Pathways.

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INTRODUCTION

The passage of RA 11223 (Universal Health Care Act) last February 20, 2019, commences a major shift in public health management in the Philippines. Essentially, this law "reverses" the devolved health care functions from the barangays and municipalities to the provinces with the Provincial Service Delivery Networks (PSDNs) as the loci of control. In order to achieve universal health care (UHC), PhilHealth not only must cover all Filipinos but also provide members with quality care. Doing so would require additional funding and efficient use of scarce resources. One way of efficiently using funds is ensuring that health insurance fraud is avoided or altogether eradicated.

Health care fraudsters use a variety of disingenuous practices to steal from health insurance funds. The implementing rules and regulations (IRR) of Republic Act (RA) 10606 or the National Health Insurance Act of 2013, the law that outlines the mandates of PhilHealth, states that fraudulent offenses can be committed by not only health care providers and PhilHealth members but also by PhilHealth management, and that fraud may include padding of claims, ghost patients, extending periods of confinement, post-dating claims, and falsifying information (e.g., upcoding and code substitution). Health care fraud threatens to undermine the financial viability and financial risk protection mandated in the National Health Insurance Program (NHIP) by depleting funds and eventually increasing the cost of delivering health care benefits to members and beneficiaries. The impact of health care fraud further extends to patients by reducing the fund allocation for otherwise medically necessary benefits or by exposing them to unnecessary risk from unwarranted medical procedures.

It is estimated that in developing countries, between 10% and 20% of health insurance claims were fraudulent (Hsiao and Shaw 2007). Different studies concluded that the global average health care fraud rate is 6.19% (Gee and Button 2015, Gee et al. 2006). Suppose that these estimates are applicable to the Philippines, then out of the PhP 97.03 billion that the Philippine Health Insurance Corporation (PHIC or PhilHealth) has made in benefits payments for 2015, around PhP 6 (6.19%) to 19.4 (20%) billion may have been made to fraudulent claims. But official PhilHealth estimates show that fraud amounts only to PhP 2 billion which could either mean that PhilHealth is doing around three times better than the rest of the world in preventing fraud or that PhilHealth's fraud investigation is underreported (Ramos-Araneta 2015).

Studies in other countries have demonstrated efforts to combat health care fraud. Kang, Hong, Lee, and Kim (2010) used a survey of 800 clinics to examine the general deterrence effect of the Korean government's fraud and abuse enforcement program on medical clinics. They found that clinics with a high level of self-perceived deterrence or fear of penalty had a lower probability of presenting excessive claims than those whose self-perceived deterrence was low. Angima and Omondi (2016) utilized a survey of 28 registered medical insurance providers and 20 medical insurance companies in Kenya. Results showed that majority of the firms had experienced different levels of fraud. Their study suggested that the extent of fraud in Kenya was inversely correlated to the existence and extent of automation that the firms had adopted. In Australia, Flynn (2016) explored fraud in private health insurance through interviews with fraud managers from Australia's larger private health insurance funds and experts in fields connected to health fraud detection. The study demonstrated that insurance industry profits from a robust regulatory framework and strong analytics. Flynn also suggested that fraud managers had differing approaches to recovery from fraud and that they viewed the Australian Privacy Act as a hindrance to managing fraud. On the other hand, Legotlo and Mutezo (2018) explored the different types of fraud in South African medical schemes. Their study found that the perpetrators of fraud included healthcare service providers, medical scheme members, employees, brokers, and syndicates. Debpuur, Dalaba, Chatio, Adjuik, and Akweongo (2015) explored the national health insurance scheme in Ghana using focus group discussions (FGDS) and in-depth interviews. Their study showed that community members, health providers, and national health insurance system (NHIS) officers were aware of various behaviors and practices that constitute abuse.

In the Philippines, PhilHealth has set up mechanisms to detect and manage fraud (Genoesa 2018), for instance, departments within PhilHealth such as the Fact-Finding Investigation and Enforcement Department (FFIED) and its counterparts in PhilHealth Regional Offices (PROs), the Legal Department, and the Standards and Monitoring Department develop and implement anti-fraud systems and policies. However, to date, PhilHealth has yet to gauge the impact of these internally driven efforts, especially in the wake of recently publicized health care fraud in cataract surgeries and dialyses (PIA 2018; Salaverria 2019).

Conceptual framework

For fraud to prosper within a health insurance system, several things need to happen: there has to be sufficient pressure, opportunity, and rationale to commit fraud, be it by the patient, the provider, the hospital, PHIC insiders, or a combination thereof. Once fraud is committed, payment has to be released, and litigation has to be successfully defended or else the money would not be recovered. Four principles guide the framework of this study: (1) that defrauded monies are usually very difficult to recover; (2) that haste in assessing claims is usually associated with undetected fraud; (3) that fighting fraud is limited to what is known in the past, because fraud is usually hidden, and that new frauds are even more hidden; and (4) that the power of computers can complement the work of people. This study's 11-step "Catch-Counteract-Crush-Capacitate" conceptual framework for fraud prevention includes (Figure A):

A. Catch fraud

1. Protect and encourage whistle blowing and research
2. Continuously build a library of past fraudulent or suspicious claims
3. Label all new reimbursement claims as to their degree of fraudulence or suspiciousness
4. Scrutinize claims that have been labelled fraudulent or suspicious, the higher the degree, the more meticulous the scrutiny should be

B. Counteract fraud

1. Depending on outcome of scrutiny, either reimburse or deny reimbursement.
2. Pre-register all claims prior to service delivery.

C. Crush fraud

1. Impose penalties
2. Publicize standards
3. Troll social media to identify associates of known fraudsters

D. Capacitate structure

1. Continuously update legal mandates against existing and new types of frauds
2. Strengthen institutional capacities and staff capacities

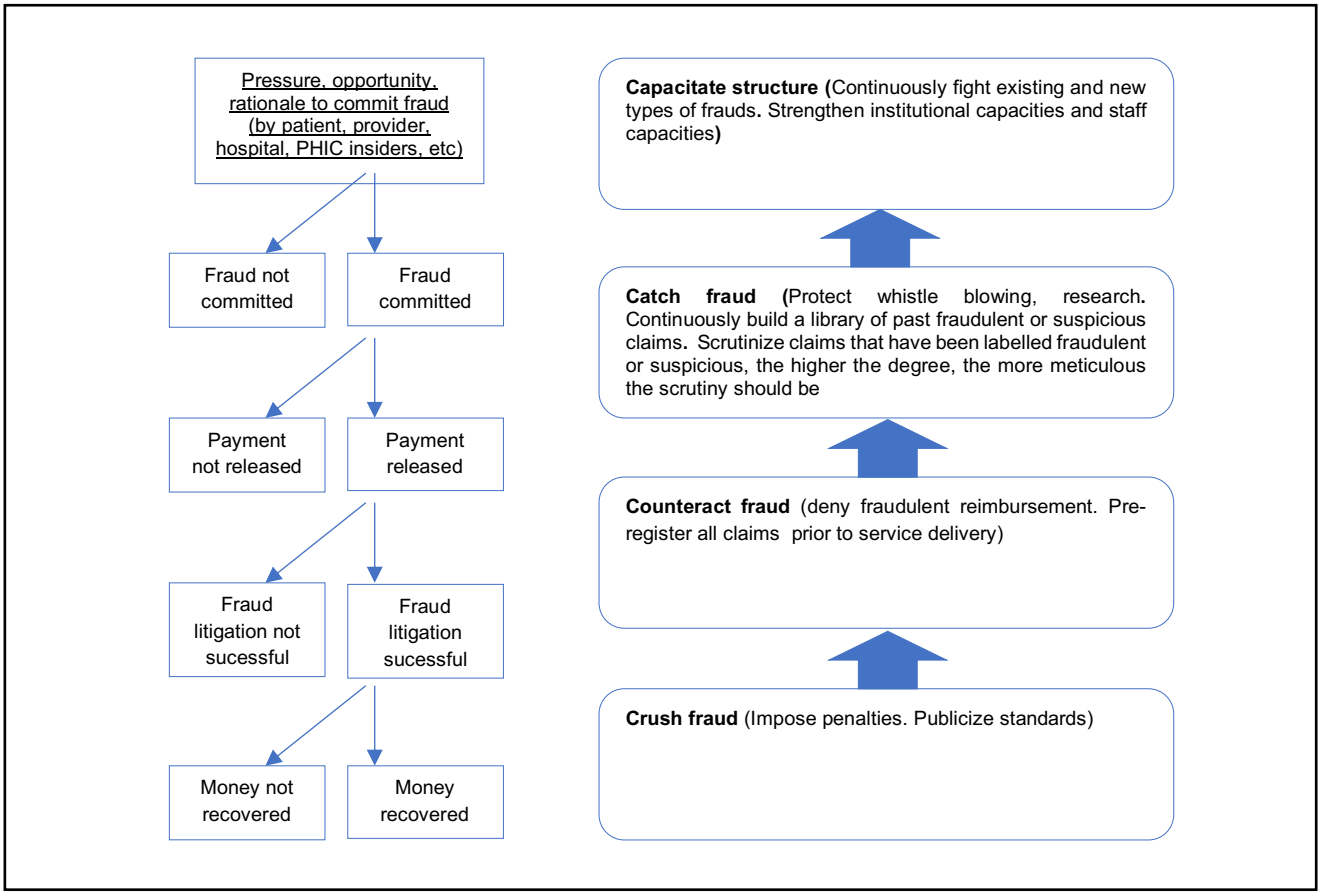

Figure A: Framework for building a fraud-resistant system

This study aimed to determine the extent of fraud in payments made by PhilHealth for benefit claims and to map out areas in PhilHealth claims processing system where fraud is highly susceptible to be committed. This study may therefore help PHIC by monetizing this fraud risk, and by providing recommendations on how to prevent these from happening. In effect, PhilHealth can efficiently use their finite resources, if health care fraud is eventually eradicated or at least lessened. To meet these objectives, the study employed a mixed method design and used available data from documents review, key informant interviews (KIIs), and focus group discussions (FGDs).

METHODS

Ethical clearance for this study was obtained from the National Ethics Committee (NEC) of the DOST PCHRD. This mixed-methods study used data from documents review, key informant interviews (KIIs), and focus group discussions (FGDs).

To be able to describe PHIC's process (e.g., forms used, offices the forms go through, etc.) of benefit availment process, a series of documents review, KIIs, and FGDs – from the start of the benefits claiming process up to the claim's release was conducted. To identify factors associated with fraud, record reviews of selected cases that PHIC flagged as potentially fraudulent from January 2015 to December 2016 were conducted. Information gathered from the said cases included the type of fraud committed, nature of the fraud, factors that contributed to the fraud, processes in the system that did not prevent fraud from occurring, and procedures or checks which were breached leading to the fraud. After listing this information, KIIs and FGDs were undertaken with experts to validate, explore ways to prevent them, and discuss areas that need to be improved. Convenience sampling of personnel with snowballing from different PHIC departments was implemented. Results from the KIIs or FGDs were compiled based on emerging common themes through thematic analysis. Information from the documents review was analyzed using univariate measures (mean, median, mode). Microsoft Excel and Stata 12 were used to perform the quantitative analyses. A fraud risk index was developed based on records review and refinement of thresholds levels during the data matching process. The fraud risk index per year was then applied to the following year's reimbursement data to estimate the possible financial loss due to fraud.

RESULTS

Benefit availment process of PhilHealth

Benefits claims applications in general start in the accredited health facility. Each health facility then submits the accomplished benefit claims application forms to the corresponding PRO. PROs then evaluate the claims and release the reimbursements for the claims, when approved (PHIC 2011). In 2016, PHIC shifted from manual to electronic processing of benefit claims in order to simplify and lessen the turnaround time of the process (PHIC 2019).

Manual filing of claims can be divided into five major steps: (1) receiving claims, (2) verification or adjudication, (3) releasing of return to hospital (RTH) or denied claims and summary of reduction form, (4) payment approval/voucher release, and (5) voucher approval and voucher release (PHIC 2011).

Similarly, the electronic filing of claims (eClaims) process can be divided into five major steps: (1) assigning claims, (2) adjudicating claims, (3) payment approval voucher generation,

(4) payment generation, and (5) return to hospital/denied letter generation (PHIC 2019).

PhilHealth also implements post-auditing of paid claims of four (4) specific disease types which include pneumonia, sepsis, acute gastroenteritis (AGE), and admissible urinary tract infection (UTI). The inclusion of these disease types seems to be due to evidence of abuse of claims from the previous experiences of reimbursement processing. The system randomly tags 10% of the total number of received claims per month for each of the four identified disease types. In addition, medical evaluators in their respective PRO's Benefit Administration Section (PRO-BAS) may also decide to manually tag in the system and thereafter review other disease types aside from those in the initially required list. They may also set the number of claims to be reviewed for these additional lists.

In 2019, PhilHealth implemented the medical pre-payment review in order to measure the quality of care given to its members. Under the recent policy, all claims for reimbursement submitted by accredited health care institutions, with exception of claims directly filed with PhilHealth, claims involving confinements abroad, and selected PhilHealth packages/benefits should be accompanied by the Claim Form 4 (CF4). The CF4 contains summarized clinical information of a patient during his or her entire stay for hospitalization. Along with the CF4, health care institutions must also submit photocopies of corresponding laboratory and imaging results administered to the patient during his or her stay in a health facility.

Fraud risk factors

Qualitative data

Based on key informant interviews and focused group discussions the following vectors for fraud were identified: (a) problem with the established information technology (IT) system for electronic processing of claims wherein findings from the medical reviewer during the pre-payment review and post-auditing of claims cannot be encoded, (b) change in the mechanism of assigning claims from the manual process which limits the reviewers the opportunity to identify patterns of fraudulent behaviors, (c) exclusion of LOS (length of stay) from the measures in assessing claims which takes out an easy red flag for fraud, (d) leniency in the required forms in submitting claims where itemized bill are excluded from the documentary requirements, (e) auto credit payment system which limits manual human fraud detection, (f) turnaround time for benefit claims reimbursement as a measure of operational efficiency which was feared to sacrifice the quality of work among the staff, and (g) limited manpower particularly the medical reviewers and legal staff assigned to handle fraud detection filing.

Quantitative data

Based on records review of 4,413 potentially fraudulent cases filed before the Fact-Finding Investigation and Enforcement Department (FFIED) of PhilHealth for the period of 2010 to 2018, four components of fraud risk factors were identified: (a) certain regions where potential fraudulent benefit claims were filed, (b) certain health care facilities (HCFs) who filed the benefit claims, (c) certain health care professionals (HCPs) who managed the cases of the filed benefits claims, and (d) certain ICD codes alleged to be commonly manipulated based on the filed benefits claims. The list of variables and risk factors and their description is summarized in Table 1.

Regions

Annually, the top region for fraudulent-risky claims reimbursement before 2014 was NCR with 59.7% of all the claims. For 2014, the top region was the Cordillera Administrative Region (CAR) with 35.8%, in 2015 it was Region 9 with 21.7%, for 2016 it was Region 2 with 58.6%, and in 2017 it was Region 11 with 31.0% (Table 2).

Table 1: Variables and risk factors used in data analysis

Variable/Theme	Description
KII and FGD	
Established information technology	IT system used for electronic processing of reimbursement claims
Manual processing of claims	Processing of original hard copies of documentary requirements for reimbursement claims by PHIC staff
Length of stay during hospital admissions	Number of days a patient stayed in the hospital during admission
Documentary requirements when filing reimbursement claims	Set of documents needed in order for health care facilities to get reimbursed of the hospital expenses that are within the prescribed case rate
Auto credit payment system	Electronic system of reimbursing the health care facilities
Turnaround time for benefit claims reimbursement	Number of days consumed from filing of benefit claims until payment
Manpower	Number of staff assigned to process reimbursement claims of health care facilities
Documents review	
Regions	Specific regions where health care facilities with doubtful reimbursement claims are located
Health care facilities	Specific health care facilities with doubtful reimbursement claims
Health care professionals	Specific health care professionals with doubtful reimbursement claims
ICD codes	Specific ICD code of doubtful reimbursement claims

Health care facilities

In 2014, 57 health care facilities (HCFs) made up 100% of all filed cases identified to be potentially fraudulent; of these, 13 made up >80% of all cases. In 2015, 40 hospitals made up 100% of all cases; of these, eight made up >80% of all cases. In 2016, 18 hospitals made up 100% of all cases; of these, ten made up >80% of all cases. In 2017, eight hospitals made up 100% of all cases; of these, four made up >80% of all cases. In addition, the data suggested that if a hospital committed fraud, it would commit the same more than once per year. In fact, eight hospitals were continually investigated for 2014 to 2016.

Health care professionals

In 2014, 26 health care professionals (HCPs) made up 100% of all filed cases identified to be potentially fraudulent benefit claims; of these, four made up >80% of all cases. In 2015, 46 HCPs made up 100% of all cases; of these, 14 made up >80% of all cases. In 2016, 10 HCPs made up 100% of all cases; of these, five made up >80% of all cases. In 2017, 11 HCPs made up 100% of all cases; of these, seven made up >80% of all cases. Similarly, when a health care professional committed fraud, he/she did it more than once per year. In fact, only a handful made up a majority of the fraud cases per year in the years investigated.

ICD codes

In 2014, 134 ICD codes made up 100% of all filed cases identified to be potentially fraudulent; of these, 24 made up >80% of all cases. In 2015, 51 ICD codes made up 100% of the cases; of these, eight made up 80% of all cases. In 2016, 24 ICD codes made up 100% of the cases; of these, 13 made up 80% of all cases. In 2017, five ICD codes made up 100% of the cases;

Table 2: Distribution of doubtful claims by region

Region	<2014		2014		2015		2016		2017	
	#	%	#	%	#	%	#	%	#	%
2			107	12.2%	47	8.8%	41	58.6%		
3	16	3.6%	23	2.6%						
5	4	0.9%	2	0.2%	17	3.2%				
7	2	0.4%	65	7.4%	79	14.8%				
8									14	24.1%
9	1	0.2%	268	30.6%	116	21.7%				
10	12	2.7%			3	0.6%	2	2.9%		
11	122	27.3%	71	8.1%	45	8.4%			18	31.0%
12	2	0.4%	3	0.3%			6	8.6%	11	19.0%
4A	3	0.7%	3	0.3%					2	3.4%
CAR	16	3.6%	314	35.8%	60	11.2%	13	18.6%		
CRG	2	0.4%			109	20.4%	6	8.6%		
NCR	267	59.7%	21	2.4%	58	10.9%	2	2.9%	13	22.4%
TOTAL	447	100.0%	877	100.0%	534	100.0%	70	100.0%	58	100.0%

Table 3: Distribution of >80% of ICD codes that made up all cases for 2014

#	Disease (ICD code)	# of doubtful claims	%	Cumulative %
1	Community Acquired Pneumonia, All Severity (J18.9)	215	28.4%	28.4%
2	Chronic Obstructive Pulmonary Disease (J44)	69	9.1%	37.5%
3	Urinary Tract Infection, Admissible (N39.0)	60	7.9%	45.4%
4	Acute Gastroenteritis (A09.9)	37	4.9%	50.3%
5	Asthma in Acute Exacerbation (J45.90)	32	4.2%	54.6%
6	Hypertensive Emergency /Urgency (I10.1)	24	3.2%	57.7%
7	Essential Hypertension (I10.9)	23	3.0%	60.8%
8	Stroke, Infarction (I63.9)	18	2.4%	63.1%
9	Pediatric Community Acquired Pneumonia (J18.92)	16	2.1%	65.3%
10	Pulmonary Tuberculosis (A15.1)	12	1.6%	66.8%
11	Acute Gastritis (K29.1)	10	1.3%	68.2%
12	Influenza (J11.1)	10	1.3%	69.5%
13	Upper Respiratory Tract Infection (J06.9)	10	1.3%	70.8%
14	Normal Delivery (RVS MCP01)	9	1.2%	72.0%
15	Allergic Reactions (T78.4)	8	1.1%	73.1%
16	Hypertension (I10.9)	8	1.1%	74.1%
17	Diabetes Mellitus with complication other than Coma and Ketosis (E14.6)	7	0.9%	75.0%
18	Newborn Sepsis (P36.9)	7	0.9%	76.0%
19	Cerebrovascular Disease (I61.1)	6	0.8%	76.8%
20	Congestive Heart Failure (I50.0)	6	0.8%	77.5%
21	Ischemic Heart Disease with Myocardial Infarction (I21.9)	6	0.8%	78.3%
22	Dengue Fever (A90)	5	0.7%	79.0%
23	Newborn Complicated Large Baby / Normal Newborn Package (P08.0)	5	0.7%	79.7%
24	Cataract (RVS Code 66987)	4	0.5%	80.2%

of these, two made up >80% of all cases (Table 3, Table 4, Table 5, Table 6).

Fraud index

All the identified risk factors from the records review were deemed to be of equal importance, and thus, distributions of 1.0% were assigned 1.0 point. Potentially, every claim can have risk index of between 0 and 83.7 points; the higher the index, the more likely the claim maybe fraudulent.

Application of the identified factors associated with suspicion of fraud to 2015, 2016, 2017, and 2018 PhilHealth claims datasets yielded annual fraud index points ranging from 0 to 127.70 points. The computed standard deviation, a measurement of the

Table 4: Distribution of >80% of ICD codes that made up all cases for 2015

#	Disease (ICD code)	# of doubtful claims	%	Cumulative %
1	Biopsy of Anorectal Wall, Anus (RVS 45100)	108	22.0%	22.0%
2	Community Acquired Pneumonia, all severity(J18.9)	104	21.1%	43.1%
3	Influenza (J11.1)	77	15.7%	58.7%
4	Cataract (RVS Code 66987)	33	6.7%	65.4%
5	Urinary Tract Infection, Admissible (N39.0)	33	6.7%	72.2%
6	Essential Hypertension (I10.9)	20	4.1%	76.2%
7	Pediatric Community Acquired Pneumonia (J18.92)	17	3.5%	79.7%
8	Stroke, Infarction (I63.9)	9	1.8%	81.5%

Table 5: Distribution of >80% of ICD codes that made up all cases for 2016

#	Disease (ICD code)	# of doubtful claims	%	Cumulative %
1	Ischemic Heart Disease with Myocardial Infarction (I21.9)	7	12.50%	12.50%
2	Maternal Care Package (RVS Code MCP01)	6	10.70%	23.20%
3	Chronic Kidney Disease (N18.9)	5	8.90%	32.10%
4	Hemolytic Uremic Syndrome, Chronic Kidney Disease (D59.3)	5	8.90%	41.10%
5	Community Acquired Pneumonia, Moderate Risk (J18.92)	4	7.10%	48.20%
6	Pneumonia I (J18.92)	4	7.10%	55.40%
7	Stroke, Hemorrhagic (I61.9)	4	7.10%	62.50%
8	Stroke, Infarction (I63.3)	3	5.40%	67.90%
9	Acute Renal Failure (N17.9)	2	3.60%	71.40%
10	Heart Failure (I50.0)	2	3.60%	75.00%
11	Amoebiasis, Moderate Dehydration Corrected (A06.1)	1	1.80%	76.80%
12	Bronchial Asthma in Acute Exacerbation (J45.90)	1	1.80%	78.60%
13	Cerebro Vascular Accident (CVA), Infarct (L) Frontal Area / Stroke Infarction (I63.9)	1	1.80%	80.40%

Table 6: Distribution of >80% of ICD codes that made up all cases for 2017

#	Disease (ICD code)	# of doubtful claims	%	Cumulative %
1	Community Acquired Pneumonia, all severity (J18.9)	44	75.90%	75.90%
2	Maternal Care Package (RVS Code MCP01)	7	12.10%	87.90%
3	Cataract (RVS Code 66987)	4	6.90%	94.80%
4	Bronchial Asthma in Acute Exacerbation (J45.90)	2	3.40%	98.30%
5	Bronchopneumonia, Moderate Risk (J18.02)	1	1.70%	100.00%

Table 7: Distribution of fraud risk index points by year

Year	Mean	Min	Max	SD	2 SD score (95.4% of dispersion)	3 SD score (99.6% of dispersion)
2015	7.25	0	83.60	11.28	29.815	41.09
2016	7.62	0	62.10	9.00	25.63	34.63
2017	5.63	0	120.50	11.90	29.44	41.34
2018	13.24	0	127.70	21.29	55.85	77.13

dispersion within a normal distribution, ranged from 9.00 to 21.29. The minimum score for two standard deviations from the average ranged from 25.63 to 55.85. As a rule of thumb, two standard deviations from the average represent 95.4% of the data range and are usually considered part of the "normal distribution". Scores beyond the two standard deviations from the average are considered "not normal." Thus, we may consider claims with index scores above the two standard deviation scores (2SD score) to be more likely to be fraudulent than not fraudulent (Table 7).

Table 8: Distribution of fraud risk index point by the total number of claims for years 2015-2018

Year	Total number of claims	0 score	>0 to ≤2 SD score	>2 SD score to ≤3 SD score	>3 SD score
2015	10,769,507	1,146,741 (10.65%)	8,240,184 (76.51%)	1,267,943 (11.77%)	114,639 (1.06%)
2016	12,261,993	4,087,597 (33.34%)	7,779,216 (63.44%)	183,405 (1.50%)	211,775 (1.73%)
2017	10,082,058	4,549,742 (45.13%)	5,154,263 (51.12%)	12,921 (0.13%)	365,132 (3.62%)
2018	13,144,167	6,767,023 (51.48%)	5,575,819 (42.42%)	494,724 (3.76%)	306,601 (2.33%)

Table 9: Estimated peso value of fraudulent-risky claims

Year	Total value of claims	No risk	Low risk	Moderate to high risk
2015	118,598,300,000.00	14,716,760,000.00 (12.41%)	86,784,390,000.00 (73.18%)	17,097,115,000.00 (14.42%)
2016	129,598,700,000.00	40,848,060,000.00 (31.52%)	83,658,270,000.00 (64,55%)	5,092,417,000.00 (3.93%)
2017	105,493,900,000.00	49,258,190,000.00 (46.69%)	52,042,830,000.00 (49.33%)	4,192,840,300.00 (3.97%)
2018	132,612,815,000.00	65,112,440,000.00 (49.10%)	57,026,710,000.00 (43.00%)	10,473,665,000.00 (7.90%)

Table 10: Anti-fraud interventions by fraud risk index

Fraud risk index	Interpretation	Anti-fraud intervention
0 to 20	Acceptable level of risk	Do nothing
>20 to 40	Minimal suspicion, maybe due to clerical errors	Require medical charts as attachments to the claims application
>40 to 80	High suspicion	Require medical charts as attachments to the claims application, and conduct telephone interviews of physicians and of patients, separately
>80	Most likely fraudulent	Conduct personal interviews with hospital, physicians, and patients

The annual distribution of the fraud index points as a percent of the total number of claims falls within the following categories: 0, >0 to ≤2SD Score, >2SD Score to ≤3 SD Score, >3 SD. Scores are given in Table 8. In essence, the distributions of the risk index points follow a distribution curve that is skewed to the right (i.e.; longer tail to the right), confirming that scores higher than 2 SD maybe outliers.

If we define the 0 points as no risk, >0 to <2 SD score as low-risk, and >2 SD scores as being moderate to highly risky of fraud, the estimated peso values of fraudulent-risky claims would be shown as in Table 9.

In 2015, from a total of 118.6 billion peso claims, we estimate that 17.1 b pesos (14.42%) are moderate to high risk as fraudulent-risky claims. For 2016, this went down to 5.09 b pesos (3.93%), while for 2017 this was at 4.19 b pesos (3.97%), and for 2018 this was 10.47 b pesos (7.90%).

DISCUSSION

For all years, the estimated peso value of none to low-risk claims was higher than 85% of the total reimbursed value, and the estimated peso value of claims with moderate to high risk were 14.42% in 2015 and dropped to less than 4% for 2016 and 2017, and then climbed up to 7.9% in 2018.

If we compare PHIC to the global experience inclusive of first world countries with well-developed anti-fraud systems, this 7.9% is at the higher estimates of Gee, Button, and Brooks's (2006), and Gee and Button's (2018) estimates of between 0.47% and 7.10%.

If we take the four-year average of the percentage with moderate to high risk, for 2015 to 2018, this will average out to 7.5%. This then puts PHIC at lower than the lowest estimate of 10% to 20% of claims by Hsiao and Shaw (2007) for health insurance fraud in developing countries (Hsiao and Shaw 2007). This is also lower than the official PHIC estimate of 10% as reported on the PHIC website on May 22, 2015 (PHIC 2015).

The fraud detection procedures in PHIC for 2015 to 2018 seemed to be more focused on releasing timely reimbursement than on denying fraudulent claims. It was observed that medical charts were no longer required as attachments for all reimbursement claims. Although in mid-2019, the form CF4 was made requisite for surgical cases, this left all the medical cases, which made up 57.6% of 2017 reimbursements, to be without such a requirement, so that even when a PhilHealth adjudicator suspected fraud, he or she could not double-check, and would not be able to elevate such suspected cases to the medical reviewers.

At the time of the study, there were approximately 50 medical reviewers employed in PhilHealth (Chhabra et al. 2018). Essentially, they are the major PHIC defense against fraudulent claims. However, it is unclear what would be the underlying rationale for the system to decide how many records are to be reviewed and therefore, how many medical reviewers are needed.

The scope of the study was limited to the fraud detection process of PHIC. The pressure, opportunity, and rationalization of patients, providers, hospitals, and PHIC insiders to commit fraud (or not to commit) could not be ascertained with confidence because fraudsters will most likely not admit guilt because of the risk of being found out and punished by law. Further, cases that were investigated and resolved were not included because of the possible compromises that may have been agreed upon in order to reach resolution (e.g., absolution for being a whistle-blower, forfeiture of cases due to death, etc.). One source of indicators was a dataset of filed fraudulent cases by FFIED after the Prosecution Department for the years 2015 to 2018. However, these cases do not represent the entirety of the extent of fraud within the system. Fraud monitoring activities vary per PhilHealth Regional Office. Thus, depending on efforts put into fraud case-finding, the more diligent PRO may become unfairly

labelled as being more fraudulent-risky. Further, there could be some delays in the identification of fraudulent cases, thus, the actual year the fraud was committed could be different from the year it was reported.

CONCLUSIONS

This study showed that the developed index scores were able to measure the extent of potential fraud in payments made by PhilHealth for benefit claims. It was estimated that an average of 7.5% of payments made by PhilHealth for benefit claims from 2015 to 2018 had moderate to high fraud risk scores. Areas where fraud could possibly happen such as benefit claims from certain health facilities, attending physicians, and ICD codes, were also determined.

RECOMMENDATIONS

The process of updating the fraud risk index should be undertaken every year for implementation in the following years. Based on the distribution and cost of each level of risk, it is recommended that the following thresholds have their own set of anti-fraud interventions (Table 10).

The process of medical review seems inadequate, with only 50 medical reviewers for the 200,000 or so potentially fraudulent claims that need to be assessed. In general, human resources at the PRO BAS, particularly in the post auditing section who mainly detects potential fraudulent claims, should be increased significantly.

PHIC management should undertake measures to counter the perceived sense of insecurity among assignors, assessors, adjudicators, and medical reviewers. A process of protecting their anonymity and a ready legal defense team may be considered by PHIC. At the same time, capacitation for fraud detection and prevention should be implemented at all levels of the organization from the national office to the PhilHealth Regional Offices. Moreover, a rigorous third-party auditing system for fraudulent claims may provide additional support to PHIC's drive for better financial governance and fiscal stewardship. In the case of PHIC, as a government-owned and controlled corporation (GOCC), the role of the Commission on Audit (COA) cannot be discarded and perhaps the addition of the services of an independent international private auditing firm should be studied.

The process of pre-authorization seems to be an accepted and effective fraud deterrent practice but this should be balanced against the risk of unjustified disallowances or delays to approval as well as assistance to providers to adopt (Kang et al. 2010; Angima et al. 2016; Flynn 2016; Kirlidog and Asuk 2012).

System support for fraud detection may enhance the effectiveness of fraud prevention. The new subsystems may include an automated Relative Size Factor (RSF) test, Same-Same-Same (SSS) test, Same-Same-Different (SSD) test, identification of admissions beyond maximum bed capacity, and training on and use of checklist on the fraud-related component of Clinical Pathways (eg, length of stay, age-appropriateness of medication or procedures, required laboratory tests, etc) (ACFE 2018).

Accordingly, RSF size of 2.5 or higher should be reviewed more closely, for cases of ghost claims, upcasing, noncompliance to Clinical Pathways (Caesarean section instead of normal spontaneous delivery), or even patient defrauding by the hospital. All SSS test duplicates should require an explanation from the provider or patient, as a defense against ghost claims, or claims attributed to dead patients. The SSD pattern is useful not only to identify errors in claims, but also to spot fraudulent activities such as "family admissions", medical mission claims, or unscrupulous recruitment claims. Admissions above the maximum bed occupancy rate may flag possible ghost patients, ghost claims, or even low quality of care that should not be reimbursed. Clinical Pathway (CP)-based fraud standards would be a simple, and straightforward reference for adjudicators or medical reviewers. Length of stay (LOS) beyond that specified by Clinical Pathway (CP) may signal low quality of care or fraudulent claims. There should be more of such clinical pathways with specific fraud milestones identified, that are provided as reference materials or even as checklists for adjudicators and medical reviewers.

For further research, it is recommended to conduct a burden of fraud study that will take into account not only the immediate cost of defrauded reimbursement claims, but also the cost of illness or rescue interventions from delayed cure (due to delayed reimbursement) or subsequent illnesses due to the consumption of unnecessary tests, interventions, or medicines.

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CONFLICT OF INTEREST

All authors have no conflict of interest.

CONTRIBUTIONS OF INDIVIDUAL AUTHORS

AA Ulitin is the principal author. Together with HA Valverde, JD Agapito, RTD Miguel, KJG Cheng, DB Anacio, and HY Lam all contributed to the conceptualization of the study, acquisition and analysis of data, drafting and revising of the manuscript, and final approval of the version to be published. All authors agree to be accountable for all aspects of the work. All authors declare that the manuscript's data, figures, graphs, calculations, etc. are authentic.

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