Association between Healthcare Provider Payment Systems and Health Outcomes in Ghana

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Abstract

Different payment systems generate different incentives for patients, providers, and purchasers. This study uncovers the effect of provider-payment methods on patient health outcomes, utilization of healthcare services and referral patterns in Ghana. Using data on 250 enrollees of the National Health Insurance Scheme (NHIS) from each payment plan (i.e., capitation and Diagnosis Related Groupings/fee-for-service plans), ordered logit, negative binomial and logit regression results showed that patients under capitation were 4.6% less likely to report better health and had 29% fewer visits relative to patients under DRG/FFS. In relation to referrals, capitated providers were more likely to refer patients than under DRG/FFS plans. Better health outcomes were reported by patients of private health facilities. Capitation in Ghana led to under-provision of care and cost-shifting, hence decreasing any efficiency gain from the reform. Purchasing of healthcare needs to be strategized to ensure efficient utilization of resources.

Keywords: Capitation; health outcomes; Referrals; Healthcare utilization

Introduction

Healthcare financing is changing dramatically in low- and middle-income countries. Many of these countries have developed and implemented national strategies and policies to achieve universal health coverage (UHC) for their citizens. The goal of UHC is to ensure availability and accessibility of quality health services for those in need regardless of their financial situation. The focus of healthcare financing has therefore shifted from out-of-pocket form of financing to health insurance, which may be social, or private. An improperly structured purchasing arrangements

under a health insurance may undermine the progress towards UHC, due to the incentives to engage in over or under provision of services by providers. This leads to inefficiencies in the health system.

How best to pay healthcare providers for their services, out of the pooled resources, is still a subject of considerable debate due to the mixed responses of the different types of payment systems on providers' attitude and incentives [1-4]. As a result, provider payment systems are continuously going through reforms, especially in low- and middle-income countries, with the aim of mitigating their negative effects and preserve their positives. Many payment reforms have attempted to depart from the dependence on the traditional volume driven, i.e., fee-for-service (FFS), method to cost-sharing method. The FFS encourages over-provision of services and increases healthcare costs rapidly, as evidenced in Thailand, Taiwan, Korea and several other countries [5]. The Diagnostic Related Group (DRG) method of payment even though can contain cost more than the FFS, as it prices the bundle of services for the treatment of an episode of illness, it creates incentives for upcoding which can escalate costs. Purchasers are therefore turning towards various cost sharing arrangements including the supply side cost sharing method such as capitation.

The cost experiences under FFS, per diems, DRG, among others, perhaps, have given more popularity to capitation as an alternative way, in many reforms, of paying healthcare providers because of its cost saving potential [4 6]. Capitation provides a fixed fee per enrollee for all services required within a fixed time period, usually a year [4 5 7], and may be modified to reflect some features of the DRG approach, e.g., different rates for persons in different risk groups. By this, capitation provides no direct connection between payments and a provider's actual healthcare cost of a patient. Under such circumstances, efficient providers may have surpluses to keep, whilst inefficient ones are punished through the trauma of seeking extra funds to cater for patients on

their register [7 8]. The capitation payment method aims to improve efficiency, access, and equity without compromising on the quality of care [9-11]. However, a major drawback is the high potential for healthcare providers to underprovide the optimal services needed and reduced quality [1 2]. Providers are efficient if they provide the optimal quantity and quality of services under limited resources such as keeping outputs constant. Cost reduction may signify reduction in inputs or resource use, but may not be efficient if output or quality is altered.

In many cases, providers under volume driven and fixed fee payment methods of reimbursements differ in the way they care for patients which may affect patient and treatment outcomes, or even patient satisfaction regarding the service received. The reason is that capitation payments, or fixed fees in general, turn providers into risk bearers making them financially responsible for each enrollee's cost of care under the contract. Therefore, providers have an incentive to control cost of care per enrollee by either improving on efficiency, or engage in behaviors that may adversely affect treatment decisions and outcomes [2 12-14]. There is a high potential for such healthcare providers to underprovide services and consequently lower overall healthcare costs. This incentive is even stronger when monitoring of access and service quality is hard, and also when providers are imperfect agents for patients [2]. Indeed, empirical studies suggest that services like laboratory tests are fewer under capitated plans relative to FFS, though clinical outcomes have not been significantly different for the two plans [15]. Provider payment systems are, therefore, crucial in achieving improved access, quality, equity, and above all efficiency in healthcare delivery since each payment mechanism has implications on cost and treatment decisions and outcomes.

The current study investigates the effect of capitation on patient self-reported health outcomes, hospital visits and referral patterns of Ghanaian National Health Insurance enrollees. That is, we compare patients in fee-for-service and DRG groups with those under capitation to see the

differences in health outcomes, referral patterns and healthcare utilization (visits). The study tests the conventional argument that capitation leads to efficient utilization of resources [1 2 4]. Capitation, fee-for-service and DRG are entirely different payment mechanisms and therefore combining FFS/DRG is highly restrictive. However, given the absence of detailed information from patients hence we do not consider capitation versus FFS or capitation versus DRG but rather capitation versus FFS/DRG. The reason is that the FFS and DRG were both in use in other regions for various services. Our analysis uses malaria patients to proxy all diseases since it is the major cause of morbidity and mortality in Ghana [16]. Indeed, between 2002 and 2017, malaria has consistently ranked number 1 among the top ten causes of outpatient healthcare utilization. It was also the major cause of admissions in health facilities [17]. Therefore, using malaria as proxy of all diseases under the health insurance is appropriate. Besides comparison of treatment outcomes of one disease is more valid than that of several diseases. Comparing treatment outcomes of several diseases may be invalid because it would be difficult to determine if variation in outcomes is due to differences in the diseases being treated or differences in payment schemes.

The suitability of a specific payment method is country and context specific as it depends much on governance and institutional set-up. Nonetheless, incentives generated under various purchasing arrangements in different jurisdictions have similarities, such as over or under provision of services. Many studies agree that services are likely to be underprovided under capitation since the supplier-induced demand for care under fee-for-service would be curtailed, and providers may find it proper to further reduce demand under capitated plans [2 18 19]. If overall health outcomes are not significantly different for capitated and FFS/DRG plans, then patients would not be negatively affected medically [10 13 20 21]. In fact, some studies argue that the quality

and quantity of care under prepaid plans are either equal to or better than that provided under fee-for-service [22].

Provider Payments under the Ghanaian National Health Insurance Scheme (NHIS)

Ghana's NHIS, established in 2003, paid for all healthcare services for its enrollees through fee-for-service arrangements prior to 2007. These payments include consultation fees, drugs, laboratory test and other cost of treatment according to the benefit package of the scheme and the NHIS guidelines [23]. The NHIS accredited healthcare providers render services to enrollees; then the providers (public and private) submit their claims to the National Health Insurance Authority (NHIA), which is the corporate body that runs the NHIS, for reimbursement. The authority could not bear the rapid escalation of healthcare expenditure due to large claims payment (caused mostly by increased utilization) in its early years [24-26]. According to the NHIA [26], total disbursements of claims payment increased by 367% between 2005 and 2006. The rising claims necessitated reforms in payment mechanisms and, in 2007, the payment method was reformed to reflect patients' disease episode, Ghana Diagnostic Related Groupings (G-DRG), to pay for services and arrest the galloping health expenditures [24 25].

However, not much was achieved in cost saving due to fraud on the part of schemes and providers as claims payments continued to rise. The DRG created a situation where almost every patient was diagnosed with higher price disease, and some facilities got reimbursement for no work done [27]. Consequently, claims payment by the authority almost quadrupled of its 2007 figure within two years [26 27]. [28]. Ghana's experience with DRG system and FFS is not an isolated case. Countries such as South Korea, Brazil, Thailand, and Taiwan have had similar experiences [5 29], suggesting that the payment mechanism may generate new incentives either on the part of providers or patients.

To control the escalating expenditures and save the NHIS from collapsing, the NHIA introduced a capitation-based payment system (i.e., patient list system) to cater for primary healthcare expenditures. Here, providers are prepaid for future provision of defined services to enrollees in NHIS accredited health facilities to improve pricing and reimbursement activities as well as the efficiency of providers [30].

The capitation payment method was piloted in the Ashanti Region but was not without fierce resistance and opposition from medical providers, pressure groups, and politicians as it continues to be a public discussion [31-33]. To register their displeasure, some of the region's private medical providers initially withdrew their services under the capitation. The providers and opponents argued that the capitation system would jeopardize the quality of healthcare delivery, particularly primary health care. Capitation was, however, suspended in 2017 until further notice to allow for thorough review [34]. Though the technical components of the Ghana's capitation plan are to check and solve the problems with the payment system, the incentive for providers to alter treatment decisions cannot be ignored.

There have been studies on the impact of capitation under the NHIS on healthcare utilization and cost containment. For example, Andoh-Adjei, et al. [35] showed that both healthcare utilization and claims fell after the introduction of capitation in the Ashanti region. Opoku, et al. [36] also show that capitation led to efficient use of resources. A synthesis of the evidence showed that capitation is efficient as it reduced cost and provided a stable stream of revenue to healthcare providers. Nonetheless, such cost savings reduced the quantity and quality of care, encouraged skimming on inputs, and patient-dumping [3]. Prior to these, Agyei-Baffour, et al. [37] studied the knowledge, perceptions and expectations of capitation payment system enrollees and providers' perspective. They found that some enrollees' attitude towards capitation was poor. It is however not clear from

these studies how such a change in cost will affect the health of patients. If reduction of utilization leads to deterioration of health, then any cost saving from the reduction of utilization cannot be efficient. The current study does not only include the health outcome of patients in determining the incentives under capitation, but also examines other incentives such as cost shifting through referrals that could also affect efficiency of the payment scheme. A thorough examination of the impact of capitation on the efficient use of resources is important to inform policy on the implementation of the payment scheme when it is reintroduced.

Methods

Setting

The study was conducted in Ashanti and Brong Ahafo (which has currently been divided into Bono East, Brong Ahafo, and Ahafo) Regions of Ghana. Since capitation was being piloted in the Ashanti region during the study period, the Ashanti region served as the intervention region and was done purposively, while Brong Ahafo region served as the control region. Before selecting Brong Ahafo, a listing of all the remaining nine regions was on pieces of paper. These papers were then put into a small container and thereafter shaken. A piece of paper containing Brong Ahafo was drawn and therefore used as control group. This selection procedure is in line with previous studies [38].

Ashanti Region is centrally located in the middle belt of Ghana and occupies a total land area of 24,389 square kilometers representing 10.2 per cent of Ghana's total land area. The region's population is 4,780,380 (with 51.5% females) representing 19.4 per cent of the country's population [39]. The region is 61 percent urbanized [37]. As of 2010, the region had 527 health facilities with the Ghana Health Service operating about 33% of all the facilities; the population hospital ratio is 48,276 [40]. As of January 2012, providers serving NHIS patients were paid based

on capitation method; 37.8 per cent of the region's population were active members of the NHIS in 2011 [41].

Brong Ahafo Region (BA) covers an area of 39,557 square kilometers with a population of 2,310,983 [39]. The region has more females (50.4%) than males [37]. Urban population constitutes 44.5 per cent of the total population of the region. In 2011, about 46 per cent of the region's population were active members of the NHIS [41]; NHIA accredited providers in the region are paid based on Fee-for-Service (FFS) and Diagnosis Related Groupings (DRG) methods as of 2012. In 2007, Ashanti and Brong Ahafo regions recorded 750 450 and 725 057 malaria cases, respectively. This accounted for about 21% and 20% of all reported cases, respectively. These regions also recorded the highest cases in 2016. Therefore, focusing on malaria in this study is appropriate.

Study Design

The study used a cross-sectional research design; data were collected at specific point in time, i.e., 2012/2013. Structured questionnaires were the main instruments used in eliciting information from enrollees. This cross-sectional design generally allows different variables to be compared simultaneously. The questionnaire contained questions on type of facility visited and the ownership status of such facilities; whether enrollees paid additional fees aside their health insurance subscription; whether they were admitted and if so, how long they were hospitalized. Respondents were also asked to give the number of visits they have had after the initial visit/discharge; and finally, they were asked to rate their health condition/outcomes ranging from very poor to excellent. In addition, information on income, age, employment, and educational levels were collected.

The sample size was determined scientifically. Using 5 percent error margin and 95 percent confidence interval, the required sample size for the study based on Yamane [42] was 377 for Ashanti and 382 for Brong Ahafo. However, due to time and financial constraints, a sample 250 participants were conveniently selected for each region. Such sample sizes are only possible when the error margin is increased from 5 percent to 6 percent which is still an acceptable level of significance. The sample size is therefore acceptable. We acknowledge that using a multi-stage probability sampling is the ideal approach. However, the high financial cost and time involved in multi-stage probability sampling motivated us to use a different sampling approach. To select participants for the study, a starting point was determined by the enumerators by selecting the first house to visit. Afterwards, every tenth house was visited. In the absence of eligible member, the next house was visited. In the house, anybody present could answer the questions posed by the enumerator, provided that the respondent is an enrollee of NHIS and had visited a health facility due to malaria within two months before the interview. There was no simple random procedure in selecting participants in the house. As indicated earlier, this study uses former malaria patients since malaria has been the major cause of morbidity and mortality in both children and adults in Ghana. Using malaria increases the probability of meeting a potential enrollee for interview hence reducing the time for data collection.

Outcome measures

This study collected information on the patient–reported health status or health conditions under capitation and FFS/DRG plans for those who sought medical treatment in an NHIS accredited health facility. Thus, self-reported health status is used as a measure for health outcome. Other outcomes of interest are referrals and hospital visits. For the purposes of this study, enrollees are active members of the NHIS at the time of the survey since such people were eligible to receive

healthcare services purchased by the NHIA. The study uses a cross-sectional data and therefore the analysis is more of a description of the relationships between the variables under study.

Statistical Analyses

Many factors influence the health of an individual. These include biological and environmental as well as socio-economic factors [43 44]. This study assumes that the health status of a person depends on demographic factors (such as education, gender, and age), where s/he receives treatment when sick (i.e., facility information such type of facility, ownership of the facility), health insurance status (and the existence of co-payments), income[1] and how the healthcare provider is reimbursed. These factors may also affect healthcare utilization patterns and referrals rates. To find the association between the provider payment mechanisms and patients health and the behaviors adopted by providers, the following equations are estimated.

$$\boldsymbol{H_i^* = \varphi + \beta_1 X_i + \beta_2 K_i + P_i + \varepsilon_i} \quad \textbf{(1)}$$

$$\boldsymbol{U_{hi}^* = \varphi + \beta_1 X_i + \beta_2 K_i + P_i + \varepsilon_i} \quad \textbf{(2)}$$

$$\boldsymbol{R_i^* = \varphi + \beta_1 X_i + \beta_2 K_i + P_i + \varepsilon_i} \quad \textbf{(3)}$$

where X_i is a vector of demographic factors (i.e. age, income, and dummy variables representing gender, education, employment status), $\boldsymbol{K_i}$ is vector of facility information (i.e. facility type and their ownership status), $\boldsymbol{P_i}$ is a vector of payment methods used in paying healthcare providers (capitation and FFS/DRG) affecting the dependent variable and $\boldsymbol{\varepsilon_i}$ is the disturbance term. $\boldsymbol{K_i}$ and $\boldsymbol{P_i}$ enter the regression in the form of dummy variables taking the values of 1 and 0. $\boldsymbol{H_i^*}$ is patient reported health outcome, coded as 0, 1, 2, 3, 4 (very poor, poor, good, very good, excellent,

[1] Income as a variable is measured with error and hence could be endogenous; however, the error diminishes significantly when the period of interest is short. Thus, in this study monthly income is used for the period in which the individual received care. The direct use of income is still a limitation in the study. The results on income is therefore interpreted with caution.

respectively). U_{hi}^{*} is healthcare utilization by the patient measured by the number of visits to the health facility, while R_{i}^{*} represents the referral pattern by providers (coded as 1 for referrals and 0 otherwise). Overall, the effect of each variable was captured using dummy variables, except age and income.

For analysis, we used ordered logistic regression to determine the effects of the independent variables on patient self-reported health specified in (1), while the impact of provider payment method on healthcare use is obtained by estimating (2) with negative binomial estimator. Finally, to look at the effect of the payment method (i.e., capitation) on referrals, we employed logistic regression to estimate (3).

Results

Descriptive Statistics

Majority of the enrollees, 55.20%, are females; 31.2% of the respondents were unemployed as at the time the study. In terms of education, approximately 22% were graduates from tertiary institutions. Thirty-one percent of the respondents (31%) had received basic education, while those with secondary education were 29.40% and 17.80% have had no formal education. Their ages ranged between 15 years and 90 years with a mean of 35 years. The mean monthly income was GH¢585.00 (US$292.50). On the average, a patient spent 3.76 days in a health facility upon admission, and after initial visit or discharge, a patient saw his/her doctor 4.42 times in the two months before the interview. Tables 1 and 2 summarize the characteristics of the sample.

Table 1: Sample Characteristics (Percentages)

Patient Information/ Variable	All Regions	Ashanti	Brong Ahafo
Gender:			
Male	44.80	47.60	42.00
Female	55.20	52.40	58.00
Level of Education:			

uneducated	17.80	24.4	11.20
Basic (JHS)	31.00	24.8	37.20
Secondary (SHS)	29.40	23.6	35.20
Tertiary (postsecondary)	21.80	27.2	16.40
Employment Status			
Employed Patients	62.20	70.40	66.00
Unemployed Patients	31.80	29.60	34.00
Ownership status of facilities visited			
Government	55.20	46.00	64.40
Mission	16.20	18.40	14.00
Private	28.60	35.60	21.60
Type of facility Visited			
Teaching/ Regional Hospital	18.40	12.40	24.40
(District) Hospital	17.40	17.60	17.20
Clinic	35.40	35.20	35.60
Health Centre	28.80	34.80	22.80
Payment of Additional fees aside Insurance			
Paid Additional Fees	73.80	81.60	66.00
No Additional Fees Paid	26.20	18.40	34.00
Type of Patient			
Inpatients	40.80	28.80	47.20
Outpatients	59.20	71.20	52.80
Preferred Primary Care Provider (PPP, Ashanti)			
Visited Chosen PPP	68.00	68.00	N/A
Referral Pattern			
Patients referred	42.20	54.40	30
Health outcomes/ status			
Very poor health status	9.00	12.00	6.00
Poor health status	6.60	7.60	5.60
Good health status	20.60	24.40	16.80
Very good health status	32.40	30.80	34.00
Excellent health status	31.40	25.20	37.60

JHS: Junior High School; SHS: Senior High School

Table 2: Other Characteristics

Variable	Both Regions	Ashanti	Brong Ahafo
	Mean (SD)	Mean (SD)	Mean (SD)
Age (Years)	35.05 (13. 99)	35.75 (13.87)	34.32 (14.10)
Income (GH¢ p. m)	585 (352.09)	675.97 (394.91)	494.04 (275)
Visits	4.42 (3.82)	3.78 (3.90)	5.06 (3.64)
Length of stay (days)	3.76 (2.22)	2.92 (1.18)	4.22 (2.50)

Standard deviation in parentheses. Exchange rate: US$1.00: GH¢2.00 (average for 2013)

In relation to the type of facilities patients sought treatment and who owns such facilities, most of the respondents (55.20%) reported using publicly owned healthcare facilities, while 16.20% sought treatment from facilities owned and operated by religious bodies usually known as Mission hospitals and/or clinics. Private healthcare providers served 28.60% of the respondents.

Regression results

Effect of Payment Methods on Health Outcomes

Presented in Table 3 are the results on the effect of provider-payment mechanism on patient self-reported health and hospital visits. The table also include the marginal effects from ordered logistic and negative binomial regressions. Income ($\beta = 0.001$; $p<0.05$), gender (females: $\beta = 0.512$; $p<0.01$), education (secondary: $\beta = 0.855$; $p<0.01$; tertiary: $\beta = 0.63$; $p<0.01$), provider-payment mechanism ($\beta = -0.59$; $p<0.01$) and mission ownership ($\beta = 0.563$, $p<0.01$) were statistically significant in influencing self-reported health outcomes, whereas the effect of employment status, age, private ownership, and facility type on health status were statistically insignificant at conventional levels. Of interest is the provider payment method. The coefficient shows that capitation affects health outcomes of patients negatively. The results of the ordered logistic and negative binomial regressions are presented in Table 3. To find out how changes in health outcomes due to capitation varied according facility type, and ownership, capitation was interacted with facility types as well as ownership type and the results, reported in the Appendix, show that only the interaction between capitation and private facility was statistically significant (OR = 3.890, $p < 0.01$) meaning that the odds of patients of private health facilities in the capitated region reporting excellent health versus good to very poor health is 3.89 times greater than those of other facilities, mission and public facilities in the capitated region, holding all other factors constant.

Table 3: Effect of Payment system on Health Status and Visits

	Self-reported Health		Hospital Visits	
VARIABLES	Coefficient	Marg. effects	Coefficients	Marg. Effects
Age	-0.012*	0.001*	0.010***	0.044***
	(0.006)	(0.000)	(0.003)	(0.011)
Income	0.001**	-0.000**	0.000***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)
Gender				
Ref = Male				
Female	0.512***	-0.040***	0.098	0.435
	(0.168)	(0.014)	(0.072)	(0.317)
Employment status				
Ref = Unemployed				
Employed	-0.099	0.008	-0.273***	-1.211***
	(0.192)	(0.015)	(0.078)	(0.352)
Education				
Ref = No/less than JHS				
JHS	0.502*	-0.039*	-0.069	-0.306
	(0.265)	(0.021)	(0.110)	(0.487)
SHS	0.855***	-0.066***	-0.048	-0.212
	(0.277)	(0.023)	(0.111)	(0.494)
Tertiary	0.630**	-0.049**	-0.076	-0.336
	(0.287)	(0.023)	(0.117)	(0.518)
Provider-Payment Method (PPM)				
Ref = FFS/DRG				
Capitation	-0.590***	0.046***	-0.341***	-1.513***
	(0.183)	(0.015)	(0.076)	(0.347)
Ownership of Facility				
Ref = Government				
Mission Facility	0.563**	-0.044**	-0.075	-0.334
	(0.261)	(0.021)	(0.104)	(0.463)
Private Facility	-0.084	0.007	-0.206**	-0.915**
	(0.219)	(0.017)	(0.094)	(0.418)
Co-payment				
Ref = No additional fees				
Paid Additional fees	-0.275	0.021	-0.453***	-2.006***
	(0.205)	(0.016)	(0.083)	(0.386)
Facility type				
Ref = Health center				
Teaching hospital	0.410	-0.032	0.002	0.009
	(0.271)	(0.021)	(0.114)	(0.507)
District hospital	0.339	-0.026	0.072	0.318
	(0.254)	(0.020)	(0.105)	(0.467)
Clinic	0.296	-0.023	0.083	0.368
	(0.217)	(0.017)	(0.095)	(0.420)

Patient type				
Ref = outpatient				
Inpatient	-0.082	0.006	0.054	0.241
	(0.175)	(0.014)	(0.073)	(0.325)
Constant			1.549***	
			(0.184)	
Ln Alpha			-1.069***	
			(0.107)	
Pseudo R-sq	0.049		0.034	
Observations	500	500	500	500

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Provider payment methods and Healthcare utilization

With respect to healthcare utilization, age (β = 0.01, p<0.01) and income (β = 0.000, p<0.01) employment status (β = -0.273, p<0.01) were significantly associated with hospital visits (see Table 3. The coefficient of capitation was negative and statistically significant (p<0.05). The results suggest that patients under capitated payment plans had approximately 29% fewer visits compared to their DRG/FFS counterparts. Results from the interaction of capitation with facility types also show that only the interaction between capitation and private health facility was statistically significant (IRR = 0.800, p<0.05). The results suggest that compared to other facilities types (by ownership) in the capitated region, the number of visits to private facilities in the capitated region decreased by a factor of 0.799, holding all other variables constant.

Payment method and Referrals by Providers

On referral of patients to other health facilities, paying additional fees, district hospitals, and clinics had expected signs but were insignificant at 5% significance level. Being a female (β = 0.860, p<0.01), capitation payment method, (β = 0.967, p<0), mission facility, (β = 0.823, p<0.05), and private facility (β = 0.790, p<0.05) were statistically significant in affecting the providers' decision to refer patients to other facilities.

Table 4: Effect of Payment System on Referrals

VARIABLES	Coefficient	Marginal Effects
Age	0.015*	0.003*
	(0.008)	(0.001)
Monthly income	-0.000	-0.000
	(0.000)	(0.000)
Gender		
Ref = Male		
Female	-0.860***	-0.151***
	(0.226)	(0.038)
Employment status		
Ref=unemployed		
employed	0.300	0.053
	(0.251)	(0.044)
Education		
Ref = No/less than JHS		
JHS	-0.501	-0.088
	(0.339)	(0.059)
SHS	0.260	0.046
	(0.347)	(0.061)
Tertiary	0.044	0.008
	(0.360)	(0.063)
Provider-Payment Method (PPM)		
Ref = FFS/DRG		
Capitation	0.967***	0.170***
	(0.236)	(0.039)
Ownership of Facility		
Ref = Government		
Mission	0.823***	0.145***
	(0.314)	(0.054)
Private	0.790***	0.139***
	(0.277)	(0.047)
Co-payment		
Ref = No additional fees		
Paid Additional fees	0.749***	0.132***
	(0.277)	(0.047)
Facility type		
Ref = Teaching Hospital		
District hospital	0.224	0.039
	(0.305)	(0.054)
Clinic	0.256	0.045
	(0.269)	(0.047)

Health centre	2.379***	0.419***
	(0.466)	(0.077)
Patient type		
Ref = outpatient		
Inpatients	0.716***	0.126***
	(0.230)	(0.039)
Constant	-1.857***	
	(0.583)	
Pseudo R-sq.	0.235	
Observations	500	500

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

VARIABLES	(1) Referral	(3) Marginal effects
Age	0.0152*	0.003*
	(0.00838)	(0.001)
Monthlyincome	-0.000498	-0.000
	(0.000341)	(0.000)
female	-0.860***	-0.151***
	(0.226)	(0.038)
employed	0.300	0.053
	(0.251)	(0.044)
JHS	-0.501	-0.088
	(0.339)	(0.059)
SHS	0.260	0.046
	(0.347)	(0.061)
Tertiary	0.0436	0.008
	(0.360)	(0.063)
Capitation	0.967***	0.170***
	(0.236)	(0.039)
Mission	0.823***	0.145***
	(0.314)	(0.054)
Private	0.790***	0.139***
	(0.277)	(0.047)
Paid Additional fees	0.749***	0.132***
	(0.277)	(0.047)
Health centre	2.379***	0.419***
	(0.476)	(0.077)
District hosp.	2.603***	0.458***

	(0.469)	(0.074)
Clinic	2.635***	0.464***
	(0.466)	(0.074)
Inpatients	0.716***	0.126***
	(0.230)	(0.039)
Constant	-4.236***	
	(0.672)	
Observations	500	500

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Discussion

The study found that visits were 29 percent fewer in capitated plans than FFS/DRG plan, implying that patients in the capitated plans 29 percent less visits to their physicians than those in the FFS/DRG plan. This was however, accompanied by poorer health outcomes of patients in the capitated region compared to those under the FFS/DRG plan. Specifically, patients under capitated plan were 4.6% more likely to report very poor health than those under fee-for-service and DRG plans. Thus, the reduced number of visits in the capitated region reflects under-provision of services and hence reduced quality of service under the capitated plan. The reduced visits may be a way to reduce the financial risk imposed on providers under capitation. Elsewhere, capitation plans had fewer visits relative to FFS plans [10]. Bossman [45] using Ghanaian data showed that the cost per outpatient treatment reduced with capitation even though there was no significant reduction in utilization. The implication is that with capitation, providers had the incentive to use resources efficiently to maintain output at lower cost. However, this study has shown that the reduced utilization may not be necessarily optimal. Any cost savings realized by the health facilities in the capitated region through reduced utilization was overstated. The deterioration of quality of treatment could be due to absence of proper monitoring that is supposed to accompany capitation to ensure providers comply to the existing protocols. In fact, accountability and

monitoring mechanisms associated with provider payment system influence provider behavior [46], and in its absence providers may not serve the best interest of patients.

The overstatement of savings from reduced utilization is shown in the increased referrals that accompanied the reduced utilization. Patients under the capitated region were 17 percent more likely to be referred to other facilities than patients under the FFS/DRG region. Thus, part of the savings recorded as gains to the health facilities in the capitated region were actually shifted as cost to the referred facilities. In other words, the health facilities under the capitated plan shifted part of their cost of treatment to other facilities for treatment under FFS/DRG plans. Because treatment of referred patients is paid under the FFS/DRG plans, the NHIS had to bear the extra cost shifted to other facilities. The resulting cost shifting then represents a significant reduction of gain, if any, to NHIS from the introduction of capitation. This finding is consistent with results from the analyses of NHIA administrative data, which showed that growth in outpatient utilization and claims expenditure slowed in post capitation period and that capitation payment system had a significant negative effect on utilization in the Ashanti region [35]. However, the current study shows that the reduced expenditure must have been shifted to other areas of care.

The study also showed that among the health facility types, according to ownership, patients from private health facilities are 3.89 times as likely to report higher health outcomes as those in mission and public health facilities. In addition, there was no statistically significant difference in reduced visits, in the capitated region, among the health facility types by levels. This implies that private facilities provided the best quality of care among the facility types (by ownership) in the capitated region. Given that capitation requires NHIS clients to select their preferred provider, private health facilities could be using quality of care to attract and retain patients. It has been shown that facility features like shorter waiting time, availability of drugs and qualified doctors influence the choice

of primary care provider [38]. Our result confirms the recommendation made in Andoh-Adjei, et al. [31] that competition among the facility types that exists in Thailand is needed in the Ghanaian system to motivate mission and public health facilities to improve their quality to the level of the private facility.

The study found no statistically significant difference in referrals among the facility types in the capitated region, implying that the increased referrals was statistically the same among the facility types be it public, mission, or private. Given that reduction in visits was also statistically the same among facility types, it follows that private facilities managed resources better than the mission and public facility to obtain the highest quality outcome. It can therefore be deduced that private health facilities performed most efficiently compared to public and mission facilities.

The health facilities in Ghana are categorized according to the level of care they can provide, with the lowest being Health Centre, followed by District level hospital, and Teaching hospital (tertiary). The results in the study showed that there was no statistically significant difference in the reduction in the number of visits or quality of care in the capitated region. This implies that variation in the quality of care across facilities as a result of capitation, was driven by ownership than by the capacity of the facility. The results on referrals show that Teaching hospitals in the capitated region were the least likely to refer patient. This is expected as teaching hospitals are the referral health facilities.

Conclusion and Policy Implications

We investigated the association between capitation and healthcare utilization and provider behavior in the Ghanaian health system, using a cross-sectional data collected on patients. After applying logistic, ordered logistic and negative binomial regression techniques to the data, we

found that capitation is significantly associated with healthcare utilization, referral rates, and patient self-reported health status negatively. Because capitation imposes a financial risk on healthcare providers, they are more likely to reduce utilization and quality of treatment which in turn affects patient health outcome negatively. The reduced utilization accompanied by the increased referrals could imply cost shifting hence reducing any expenditure gain from the reduced utilization. Private facilities were able to provide the best quality of care compared to public and mission health facilities. The variation of quality of care was driven by facility ownership rather than facility capacity.

The findings provide an impetus for the policymakers, particularly purchasers, to develop capitation, should it be reintroduced, to have an inbuilt monitoring and evaluation mechanisms to mitigate their negative effects. The result from the study that the impact of capitation is driven by ownership justifies the need to purchase healthcare services strategically, and monitoring is an important purchasing strategy. By this, policymakers should restructure the capitation payment method as well as other payment methods to prevent under-provision and also monitor and evaluate providers routinely to improve quality of care.

Limitations

The study has limitations. It does not follow individuals over time and therefore it may not provide definite information about cause-and-effect relationships. The study did not account for events before and after the introduction of any payment method. Additionally, the regressions do not account for facility resources such as the number of beds, wards, medical personnel (e.g., nurses, medical doctors, pharmacists, and dentists) and their qualifications, and laboratory equipment due to the difficulty in obtaining such information despite their likelihood of affecting health outcomes. Further, given the nature of data, we were unable to do a separate analysis for capitation and DRG,

and capitation and FFS because these payment systems are different and may generate different incentives. Since the study uses cross-sectional data, we were unable to conduct cause and effect analysis hence interpretation of the findings should keep in mind of this limitation. We suggest that future research investigating the effects of PPMs address these and other limitations of this study.

Abbreviations

NHIA: National Health Insurance Authority

FFS: Fee-for service

DRG: Diagnostic related groupings

HMO: Health Maintenance Organization

PCPs: Primary Care Physicians

PPP: Preferred Primary Care Provider

GSS: Ghana Statistical Service

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