EFFECT OF NUMBER OF MEMBERS CAPITATED TO A HEALTHCARE PROVIDER ON EFFECTIVE HEALTH SERVICE DELIVERY UNDER CAPITATION CONTRACTING IN KENYA

Priscilla Wangai , Amos Njuguna and Joseph Ngugi
Chandaria School of Business; USIU-Africa, Kenya

ABSTRACT

This study documents the effect of number of members capitated to a health provider on effective health service delivered under capitation contracting in Kenya. In the Kenyan capitation model, there is no maximum or minimum number that is assigned to health providers. Accordingly the number of capitated members to a provider depends on the members' preference. A closed ended questionnaire was used to collect data from a sample of 297 healthcare providers practicing capitation. Logit regression analysis on the data revealed that healthcare providers who experienced congestion were 0.036 less likely to deliver quality healthcare , but 1.349 and 1.300 more likely to be accessible and affordable respectively. In addition, an increase in the number of members capitated by one unit would lead to 0.279 decrease on quality, but 1.547 and 1.359 increase in accessibility and affordability respectively. Further, an increase in the number of consultations by the most frequent member by one unit would lead to 0.173 decrease on quality, but 1.105 and 1.295 increase in accessibility and affordability respectively. From these findings, we recommend that members should be assigned to healthcare providers based on the providers' capability with a gate keeping fee to limit unnecessary visits.

Keyword: Capitation, Quality, Accessibility, Affordability, Effective Healthcare, Healthcare Provider.

INTRODUCTION

The key objective of most governments in both developed and developing economies is to provide sustainable healthcare services to their citizens in a way that promotes provision and use of efficient and effective health service delivery (WHO, 2010). According to Kulesher and Forrestal (2014) there are four different models of financing delivery of health services: the Beveridge model where the government controls and pays for health services delivery; the Bismarck model which is based on social insurance, funding is shared between employer and employees; the National Health Insurance (NHI) model where all the citizens pay into the healthcare system which is controlled by the government and the out-of pocket/private insurance model mostly practiced in Africa, India and Pakistan. In each of the four models, an element of capitation financing exists. Capitation is a healthcare financing method where the insurer pays a healthcare provider prospectively to offer healthcare services to a specified number of members in a specified period of time for a certain fixed amount of money per member (Allard, Jelovac, &

Léger, 2014). Normally, the payment is determined on a per-member–per-month (PMPM) basis. In exchange for the fixed payment per enrolled member, the healthcare provider commits to absorb the costs associated with unlimited healthcare services the member may require and to benefit from any profits thereof. Consequently a health system is created where healthcare providers become micro-healthcare insurers of the enrolled members. In so doing the insurer transfers all the risks to the healthcare providers (Kipyegon & Nyarombe, 2015).

Capitation contracting is built on the 'law of large numbers (Ensor & Witter, 2001). The number of members capitated to a provider are therefore assumed to facilitate optimum utility of fixed costs hence decreasing the probability of losses (Sun, 2006). Under capitation contract, contributors to the fund are supposed to choose a healthcare provider. According to Abodunrin, Bamidele, Olugbenga-Bello and Parakoyi (2010), the choice of a healthcare provider is largely determined by the member's perceived quality of healthcare and the satisfaction of services provided. Under the Kenyan capitation model, the number of contributors who have chosen a healthcare provider determine the total amount of money the healthcare provider is paid. This model does not provide the upper and lower limits of number of members within which a healthcare provider can effectively operate, implying that it is a Laissez-faire system of operation (Kuunibe & Dary, 2012). Some healthcare providers hence experience rapid fluctuations that affect planning and budgeting and ultimately quality of service delivered to the members (Saha, Taggart, Komaromy & Bindman, 2000). Previous researches have addressed factors influencing choice of healthcare provider by members from different dimensions: Bernard, and Sadikman (2006) investigated factors influencing patients' choice for primary doctors; Kuunibe and Dary (2012); Micheal (2016) examined the choice of the preferred primary healthcare providers among the insured persons in Ghana; Abiodun and Olu-Abiodun (2014) investigated the determinants of Choice of Health Facility by patients in Sagamu, South-West, Nigeria. This study extends other researchers' work to cover effect of number of members capitated to healthcare provider on delivery of quality, accessible and affordable health services. The study considers the following as the parameters that influence the number of members capitated to a healthcare provider; health seeking behaviour, equity distribution of capitated members to health providers and number of consultations made by the most frequent member.

2.0 LITERATURE REVIEW
2.1 Theoretical Framework
The study is anchored on the theory of economies of scale which utilizes the assumption of gains from the law of large numbers (Zelenyuk, 2013). It also assumes that fixed costs do not vary with production or number of services delivered (Ferguson, 1969). Accordingly, the cost per unit of output generally decreases with increasing scale as fixed costs are spread out over more units of output (Gaynor, Seider, & Vogt, 2005). Based on this theory, the cost of providing health services under capitation contract is expected to decrease with the increase of the number of members capitated to a healthcare provider.

2.2 Effect of Health Seeking Behaviour to Healthcare Provider

According to Green, Wyer, and Giglio (2002), health seeking behaviour by capitated members of a health plan has been reported to cause congestion in healthcare facilities affecting quality and

accessibility of health services. Further, Fernandes, Price, and Christenson (1997) study revealed that there is a strong link between long out-patient delays and patients who ended-up leaving without being attended by the doctor. The fundamental factor that determines health seeking behaviour by capitated members of a health plan is the scope, quality, availability and accessibility of services offered by a healthcare provider (Beckert, Christensen, & Collyer, 2012; Adjei, Cornelissen, Asante, Spaan, & Velden, 2016). Other factors that have been reported to influence choice of healthcare providers are strongly related to the patients' cultural practices and beliefs (Pirani, Ali, Allana, & Ismail, 2015).

2.3 Equity Distribution of Members Capitated to Healthcare Provider

One of the methods used by economies in low-income countries to improve equity in provision of health care and provide risk protection to poor households is by moving away from "user fees" to pooling funds to finance health services (Yazbeck, 2009). Capitation contracting is one of such arrangements. Existing literatures however reveal a wide range of barriers that impede equity distribution of health services such as location of health facilities, capacity and capability of the providers to offer healthcare, preference of members, health providers distribution in rural visas urban areas (Buor, 2004). In Kenya, the distribution of health facilities is skewed in favour of urban areas where most of the specialist are located (Okech & Lelegwe, 2016). This implies that the poor, who mainly live in rural areas, may not benefit from health insurance scheme as much as their urban counterparts

2.4 Frequent users

It is difficult to define who is a frequent user of health services and whether the frequent visits to the health facility are justified (Lowthian, Curtis, Cameron, Stoelwinder, Cooke, & McNeil, 2010). Nevertheless, patients who frequently visit a health facility place a relative high pressure on resources and are commonly blamed for causing congestion. Using a sample of 49,603 respondents, Hunt, Weber, Showstack, Colby, and Callaham (2006) investigated the number of times the frequent users had attended an outpatient department for consultation in the twelve months prior to the survey. The results showed that 8% of the respondents had made at least four visits hence would fit the definition of a frequent user. On the overall, this accounted for 28% of all visits to the out-patient in the survey period. Dent, Phillips, Chenhall, and McGregor (2003) also analyzed 12,490 visits by 500 repeat users of health services in Melbourne, Australian health facilities. The results revealed that only 28% of these visits might have been potentially appropriate for primary care.

3.0 METHODOLOGY

3.1 Research design
A cross-sectional design was preferred in this study since it provided a clear 'snapshot' of the outcome and the characteristics associated with the study population at a specific point in time (Barratt & Kirwan, 2009).

3.2 Study Population

The target population for this study was 1152 health facilities accredited by the national health insurance fund (NHIF, 2012) to offer outpatient service under capitation contract. This population was spread over the 47 counties in Kenya.

3.3 Sampling Design
3.3.1 Sampling Technique and Sample Size

Due to the heterogeneity and diversity of the Kenyan population, certain regions are prone to certain diseases hence, people living within the same geographical zones tend to suffer from similar diseases. The study population was hence classified into seven geographical clusters; simple random sampling technique was then used to select a sample of 297 health facilities proportionate to the number of units in each cluster using Yamane's (1967) formula:

$$n = \frac{N}{1+Ne^2}$$
(3.1)

3.3.2 Data Collection Method
Closed-ended questionnaires were used to collect primary and secondary data from the officers incharge of the sampled healthcare providers. The questions were definite, concrete and pre-determined. A positive response rate of 81% was achieved.

3.4 Data Analysis Methods
Data was coded, cleaned and entered into the Statistical Packages for Social Sciences (SPSS Version 21) software for analysis. All the independent variables and the dependent variable were analyzed using descriptive statistics to bring out their distinct characteristics.

3.4.1 Diagnostic Tests
Several diagnostic tests were carried out: Multicollinearity tests where Variance Inflation Factor (VIF) was used to test for collinearity among the independent variables in the regression model. The value of the VIF indicates the degree to which the variance of the regression coefficient is inflated due to multicollinearity (Cooper & Schindler, 2013; Maydeu-Olivares, Coffman, García-Forero & Gallardo-Pujol, 2010). Since the observed data in this study did not have a normal distribution, Pearson Chi-Square, a non- parametric test was preferred to test the hypotheses of the study. Nigelkerke Pseudo R Squared was used in predicting the accuracy of the equation of the model. Hosmer and Lemeshow Test was used to test Goodness of Fit of the model while Omnibus Tests of Model Coefficients was used to test whether the model was an improvement of the baseline category.

4.0 RESULT AND DISCUSSION

4.1 Descriptive statistics
The influence of the number of members capitated to a health provider on effective health service delivery was analyzed in respect to; health seeking behaviour, equity distribution of capitated members to health providers and number of consultations made by the most frequent member.

4.1.1 Effect of Health Seeking Behaviour to Healthcare Providers
Results in Table 4.1 show responses to the question: Do you experience congestion from patients

seeking outpatient services under capitation contract? Responses from 44.2% of the providers was "No" whereas 55.8% was "Yes".

Table 4.1: Effect of Health Seeking Behaviour

Congestion	Frequency	Percent
No	106	44.2
Yes	134	55.8
Total	240	100.0

4.1.2 Effect of Equity Distribution of Members Capitated to Healthcare Providers.

The respondents were asked whether there was need to have a minimum and a maximum number of members capitated to healthcare providers. As shown in Table 4.2 where 75.4% of the responses were against equity distribution and 24.6% were for equity distribution of members.

Table 4.2: Equity Distribution of Capitated Members to Health Facilities.

Equity Distribution of Capitated Members	Frequency	Percent
Against equity	181	75.4
For equity	59	24.6
Total	240	100.0

4.1.3 Effect of Number of Consultations by the most Frequent Member

Table 4.3, shows the number of consultations made by the most frequent member per quarter. From the results, 15.8%, 15.4% and 17.9% of the providers reported 2 to 4, 5 to 7 and 8 to 10 consultations per quarter respectively while 50.8% of the providers reported more than 10 consultations per quarter from a single member.

Table 4.3 Number of Consultations by the most Frequent Member

Frequency of Consultations	Number of healthcare Providers	Percent
2-4	38	15.8
5-7	37	15.4
8-10	43	17.9
> 10	122	50.8
Total	240	100.0

4.2 Regression Analysis

A logit regression model was used for analysis. Elements that were considered to explain the effect of number of members capitated to a healthcare provider were; congestion, equity distribution of capitated members to a health facility and number of consultations by the most frequent member were analyzed against the three measures of effectiveness viz; quality, accessibility and affordability. The results in Table 4.4, show that each of the three elements used in this study to describe the effect of number of capitated members to a healthcare provider had p

values less than 0.05 except for the effect of number of consultations by the most frequent member on affordability (p-value 0.051). Accordingly, we conclude that the number of members capitated to a healthcare provider has an effect on effective health service delivery under capitation contract.

Table 4.115: Regression Analysis of Effect of Number of Members Capitated to a Health Provider on Effective Health Service Delivery.

Effects of Number of Capitated Members	Quality (Model 1)			Accessibility (Model 2			Affordability (Model 3)		
	B	Sig.	Exp(B) (Odd	B	Sig.	Exp(B) (Odd	B	Sig.	Exp(B) (Odd
Congestion experienced (Base Category=N	-3.307	.049	.036	.299	.025	1.349	.263	.019	1.300
Equity Distribution of Members Capitated to Health	-1.277	.026	.279	.436	.040	1.547	.307	.005	1.359
Number of Consultations by the most Frequent	-1.753	.017	.173	.100	.006	1.105	.258	.051	1.295

Source: Author

The results revealed that congestion experienced by healthcare providers had a negative coefficient on quality but was positive on accessibility and affordability. The odds ratios were 0.036, 1.349 and 1.300 for quality, accessibility and affordability respectively implying that healthcare providers who experienced congestion were 0.036 less likely to deliver quality healthcare under capitation, 1.349 and 1.300 more likely to be accessible and affordable respectively under capitation contract compared to healthcare providers who did not experience congestion. On equity distribution of members capitated to healthcare providers coefficient for quality variable was negative while for accessibility and affordability was positive. The odds ratios were 0.279, 1.547 and 1.359 for quality, accessibility and affordability respectively implying that an increase in the number of members capitated to a healthcare provider by one unit would lead to a 0.279 decrease on quality, a 1.547 and a 1.359 increase in accessibility and affordability of health services delivered under capitation contract respectively. The number of consultations made by the most frequent member had a negative effect on quality however, on accessibility and affordability the effects were positive. The corresponding odds ratios were 0.173, 1.105 and 1.295. This implied that an increase in the number of consultations by the most frequent member by one unit would lead to a 0.173 decrease of quality, a 1.105 and a 1.295 increase in accessibility and affordability respectively.

5. DISCUSSION OF RESULTS

5.1 Health Seeking Behaviour to Healthcare Providers

Descriptive analysis revealed that 55.8% of the healthcare providers indicated that they experienced congestion from members seeking healthcare services under capitation contract. Regression results showed that congestion experienced by some healthcare providers, had a negative and significant effect on quality of healthcare delivered, however, its effects on accessibility and affordability were positive and significant at 5% level of significance. Consistent with these findings, Green *et al*. (2002) and Fernandes *et al*. (1997) established a strong link between long out-patient delays and patients who ended-up leaving without being attended by the doctor due to congestion in the health facilities. Under the Kenyan capitation contract model, there is no maximum or minimum number that is assigned to healthcare providers. Accordingly the number of capitated members who seek health services from a provider depend on the members' preference (Saha, *et al*., 2000). According to Andaleeb (2000) provider's efficacy lies in the view and preference patterns of those who select them, and utilize their services.

5.2 Equity Distribution of Members Capitated to Healthcare Providers

Equity distribution of capitated members was highlighted by providers who proposed that it should be pegged on ability of provider to offer services under capitation contract. Results of regression analysis showed a negative coefficient on quality of services delivered under capitation contract. This finding is in agreement with and Feldstein (1999) who argued that equity allocation of members capitated to health providers would result to low level health facilities getting more sick patients, which are more expensive to manage. Nevertheless, results on effects on accessibility and affordability showed employing equity distribution of the members capitated to healthcare providers would lead to increase in accessibility and affordability of the services delivered by the healthcare providers under capitation contract.

5.3. Number of Consultations by the most Frequent Member

Regression results demonstrated that the number of consultations made by the most frequent capitated member had a negative and significant effect on the quality of healthcare services delivered under capitation. This implied that an increase in the number of consultations by a member resulted to congestion (Hunt, *et al.,* 2006; Hansagi, Olsson, & Sjoberg, 2001) hence decreased quality of healthcare services delivered under capitation contract. Nevertheless, effect was positive and significant on the accessibility and affordability.

6.0 CONCLUSION

On overall healthcare providers who had large numbers of members capitated were more likely to deliver affordable and accessible services. However, due to congestion experienced from the large numbers and frequency of revisits for outpatient services, quality of healthcare was compromised. Under capitation contract, the number of members capitated to a healthcare provider is a significant determinant of delivering quality, accessible and affordable services from provider point of view. We thus recommend that even though insurance scheme members are allowed to choose their healthcare providers, there is need for the insurer to have a model that

help in allocating them equitably to the providers based on health service providers' capability. There is also need to have a gate keeping fee that limits the unnecessary visits.

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