Mutual Health Insurance Model: Strategic Axis for Access to Health Care for Households in the DRC. Case Analysis of the Mutuelle De Santé De Kinshasa

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ABSTRACT: This paper analyzes the issue of access to health care for households with health care needs while facing several constraints. According to the World Health Organization (WHO), the risk of a child dying before his or her fifth birthday is 8 times higher in Africa than in Europe. Rich countries have an average of nearly 90 nurses and midwives per 10,000 people, while in low-income countries, the ratio of health care personnel is barely more than 5 per 10,000 people. Inequality in access to health care is highly dependent on location. In the DR Congo, obstacles to accessing health care include: difficulties in finding certain medicines, stock-outs, lack of money and the high cost of care. Despite the low level of household income, the financing for health care access is on average 14.28% by the public authorities, 39.43% by the rest of the world (external financing) and 39.17% by households according to the national health accounts. It appears crucial to provide concrete and adapted solutions to this population which needs to access care on a daily basis when they are in a vulnerable situation. Our estimates show that none of the variables taken into account have a significant influence at the 5% threshold on access to health care for members of the Kinshasa mutual health insurance scheme, which means that membership of a mutual health insurance scheme is a valid way of accessing health care in low-income countries such as the DRC.

The comparative analysis of behavior-based approach by the Institute of Medicine (IOM), helped us reflect on the mutual insurance and access to health care in the DRC.

KEYWORDS: Mutual health insurance model, Access to health care, financing

CLASSIFICATION JEL: C51, H31, H31, I11, I13, I14, I18

I.   INTRODUCTION

Health insurance, a complex product, is challenged with finding the balance between public health objectives: access to care and financial sustainability. This sometimes requires better defining the scope of care, the extent of costs covered, the reimbursement method and improving the care quality. Partnerships with proven and extensive distribution networks can help address the low health coverage rate of vulnerable households in Africa.

Generally in Africa, 60 to 70% of health expenditure is paid by households directly to health facilities. This is estimated at 46% on average in the rest of the world: a health accident can thus lead to "catastrophic" expenditure, forcing these households to sell their goods, go into debt (Leive and Xu, 2008) or drop out of school. their children (Landmann and Frölich, 2013) to cover their medical expenses (Kruk et al., 2009). *According to the WHO, it is estimated that 6% of the world's population falls into extreme poverty for health reasons, mainly linked to excessive financial burden.*

By smoothing health expenditure over time through a prepayment mechanism and pooling the risk, insurance prevents health expenditure from turning into a disaster for households. Unlike other products, health insurance does not limit itself to making payments to cover loss or damage but relies on a third party (health providers) to provide its beneficiaries with access to Health care. As a result, the main risks associated with any insurance product (adverse selection, fraud and moral hazard) are found more acutely in health insurance[1].

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[1]Fraud can reach up to 20% of health insurance premiums in developing countries.

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Some African governments are setting up compulsory health insurance systems but only for the formal sector (civil servants, employees of private companies) financed through contributions from employees and employers. But the coverage of other categories (informal, farmers, artisans, etc.), i.e. more than 70% of the population, remains a challenge. Several private for-profit or non-profit actors (insurance companies, mutuals, brokers, various distribution and management circuits, facilitating the identification of policyholders, the collection of premiums and the payment of claims) can play an important role here which remains to be explored in the field.

Indirect costs (purchase of drugs, transport costs, etc.) can, for example, represent up to 65% of hospitalization costs. Thus, some insurance policies also cover the loss of earnings linked to the loss of income for the insured during treatment, which can represent a significant amount for non-employees who do not benefit from sick leave. Similarly, the health service payment system chosen is closely linked to the issue of access to care. The third-party payment system has the advantage for the insured of not having to advance the costs: the health facility is reimbursed by the insurer.

Partnerships could be organized between health mutuals and cooperatives affiliating poor households (agricultural producers, artisanal mining companies, etc.) which may have an interest in co-financing part of the insurance premium, insofar as it contributes to secure their activities.

As the literature informs, the issue of health is identified in economics by issues related to access, financing, costs, supply and demand, production and consumption of drugs and health services, quality and pricing of health services as well as the low level of household income and financial inaccessibility to health care. Therefore, to succeed in addressing this, researchers must more or less directly concern themselves with it and propose outlets.

The concern of this study lies in the difficulties of access to health care for households in the face of the high costs of health care under income constraints, and to propose a mutual insurance model to compensate). The proposal of the said model is inspired by the comparative analysis of the Andersen-Aday model to that of the Institute of Medicine (IOM).

At the same time, it puts forward the following hypothesis: mutual insurance would constitute a strategic axis for access to health care for households in the DRC.

II. LITERATURE PAPER

a. Andersen-Aday model

The Andersen-Aday Model of Health Care Utilization is a model aimed at demonstrating the factors that lead to the use of health services. According to this model, the use of health services (including hospital care, medical visits, dental care, etc.) is determined by three behavioral dynamics of the individual, namely the predisposing factors; enabling factors and needs[2].

This model is behavioral. It examines the natural attraction of the individual for the demand for care, recognizes a certain predisposition to consume care. As a result, accessibility to care is one of the determinants of the efficiency of a country's health system.

The behavior of the individual is marked by the preferential attitude as much as the obstacles that individuals must overcome to access care. The preferential attitude of the individual towards the demand for care may be determined by several factors, in particular: culture, health condition, the distance to be traveled to reach the health facility and the cost of care. With the help of an econometric model, it is thus possible to measure accessibility to health care, and to better identify the obstacles to access to health care. The analysis restores the individual differences in recourse to a given state of health, by differences in status in relation to insurance on the one hand, by the difference in the distance to the doctor on the other hand.

According to a first version of the model, the obstacles relate to the uninsured who must pay for the full amount of care at the time of consumption.

The pattern is specified as follows: $Y_i = Z_i'\alpha + X_i'\beta + \mu_i$; where Y_i : refers to the care of the individual, Z_i': obstacles recognized by the individuals, $X_i'\beta$: preference of the individual (health condition, culture, quality, etc.) and μ_i the random variable. This is a Logit model proposed by this approach where the *obstacle variable* is deemed real because the sign is negative, and the absolute value significantly different from 0 (zero).

The results obtained from the analyzes on the behaviorist evaluation after the collection of data from the individuals represented by the values (Y, Z, X), the regression by aggregation of the data which explains the problem through a given geographical area.

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[2]Predisposing *factors* can be characteristics such as race, age, and health beliefs. For example, an individual who believes that health services provide effective treatment for a given disease is more likely to seek care than another.
Supporting *factors* could be family support, access to health insurance, community, etc.
Need represents the actual and perceived need for health care services.
This model was developed by Ronald M. Andersen (UCLA HEALTH SERVICES 1968) through many iterations and his most recent fitness models after using services to end in health outcomes and includes feedback loops .

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The key variables (factors) explaining Andersen-Aday's "Y" health-seeking model are the recognized barriers "Z" and preferences (health condition and culture). Health-seeking by the population is weakly explained by the obstacles.

b.   Institute of Medicine (IOM) model.

The Institute of Medicine, USA / Washington (DC) and Committee on Monitoring Access to Health Care Services; National Academies Press; 1993.

According to the IOM approach, the problem of access to care can be summarized in four points:

- The waiting time before meeting a professional (access to care or obstacles);
- The distance to be traveled (from the place of residence to the health facility or hospital);
- The preferences of the individual;
- The quality of care offered by health facilities

With MILLMAN (1993), the Institute Of Medicine (IOM) radically challenged the behaviorist approach. It is no longer just a matter of measuring access to care but also access to health. Indeed, it is no longer enough to have access to the health care that one prefers, but also and above all to have access to the most effective health care.

According to the IOM model, access problems are measured on the basis of registers of various epidemiological observations, not necessarily on subjective individual data. The IOM approach takes into account two essential axes: the administrative aspect (technical) and the clinical aspect of the treatment. Alongside the measurement of skills and access to prevention, a growing number of health education programs (Health Promotion Programs) provide a large volume of impact studies.

c.   Model Criticism

The behaviorist approach of Andersen-Aday; according to Mr. Millman, noting as obstacles (distance to the doctor and lack of insurance), restricted the problem of access to health care.

Clearly, in the classic version of the behaviorist approach, it is considered that the individual who can easily access care is the one who is insured and who is still close to the doctor. In other words, the individual who is insured automatically has access to care when the need is felt.

Various approaches can constitute interesting ways to analyze the problem of access to health care in the DRC. They require addressing the issue of access to care through the prospects of public or private coverage with a voluntary structure (mutual and community insurance) or directly with households, that are mostly poor.

Clearly, several factors considered by the **Andersen-Aday** and **IOM** approaches exist in the specific case of the DRC, including distance, health conditon and insurance.

Among the elements deemed to be obstacles considered above, some actually correspond to the situations described in the DRC while others are further removed from the context of the DRC, in this case: individual preferences, geographical accessibility (although this may be debatable), and the quality of care.

The problem of access to health care in the DRC remains above all a socio-economic concern, essentially linked to the level of income or the socio-professional category. To circumvent this difficulty, it is necessary to highlight the role of mutual health associations which, since 2008, have offered support to the poorest households.

III.   METHODOLOGICAL APPROACH

An analytical approach was adopted to carry out this reflection, associated with the documentary technique and the econometric analysis to test the results of the statistical data of our local surveys with the mutual health insurance of Kinshasa on the basis of a non-probability sample. of 65 members of the mutual. These, supported by the comparative approach of two health insurance models: Andersen-Aday and the Institute Of Medicine (IOM).

The specificity of our analysis lies around this mutualist approach which allows access to care through direct support to households in need of care, the case of the Mutuelle de Santé de Kinshasa [Kinshasa Mutual Health Insurance] (MUSAK).

This qualitative model includes qualitative variables to be estimated by the maximum likelihood (ML) method, based on a sample. It expresses the relationship between a qualitative explained variable (y) with two modalities and explanatory variables (Xi) which are also qualitative variables.

The model looks like this: $In \frac{pi}{1-pi} = \beta_o + \beta_1 S + \beta_2 NR + \beta_3 \text{Rp} A + \beta_4 CTM + \beta_5 FTP + \varepsilon_I$ *(1)*

With :

β_k : *parameter to be estimated (K=0, 1, …. ,5)*

Z: access to health care through mutual insurance;

P_i : *the probability of using health care;*

S: Gender

NR: Level of disposable income;

RPA: Income allowing access to care

CTM: Cost of the co-payment.

FTP: Third-party payment fees

ε_i: *Error term (random variable).*

$$P_i = F(zi) = \frac{1}{1 + e^{-zi}}$$ (2)

Equation (2) can be written in this form: $(1 + e^{-zi})\, Pi = 1$ (3)

Given, $e^z \dfrac{Pi}{1 - Pi}$ (4)

By taking the logarithm of (5), it becomes: $Z_i = In\dfrac{Pi}{1 - Pi}$ (5)

Taking into account equation (2), to which we add the random variable, equation (1) becomes:

$z_i = In\frac{pi}{1-pi} = \beta_o + \beta_1 S + \beta_2 NR + \beta_3 \text{R.p.}A + \beta_4 CTM + \beta_5 FTP + \mathcal{E}_I$ (6)

If P $_i$ =0 or P $_i$ =1, the probabilities $\dfrac{Pi}{1-Pi}$ *will be zero or infinite.*

μ_i: *Error term (random variable).*

The model is a multiple regression in which an explained variable is supposed to maintain relationships with several other explanatory variables. It is a mathematical proposition to test its feasibility, which can be discussed and developed to verify our approach to the problem.

IV.   RESULTS

1. Descriptions

The DRC presents a worrying situation for vulnerable households in need of health care. This is noted by difficulties in accessing care, high household expenditure and low public health expenditure. The graphs below show the evolution of health expenditure in the DRC.
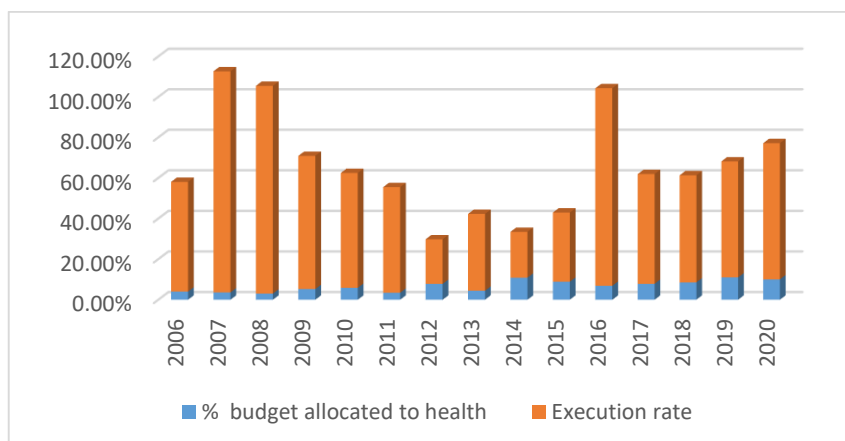

Graph n°1: Evolution of the share of the State allocated budget to health and level of execution from 2006 to 2020 (in %).
Source: Developed by the author, based on CNS data, 2020.

Budgetary allocations to health vary from year to year upwards and downwards, expressed as a % of the budget and range between 3% and 11%. This allocation does not reach 15% of the budget, far from the recommendation (MAPUTO and ABUDJA agreement). This budget allocation remains low to meet health needs in the DR. congo.

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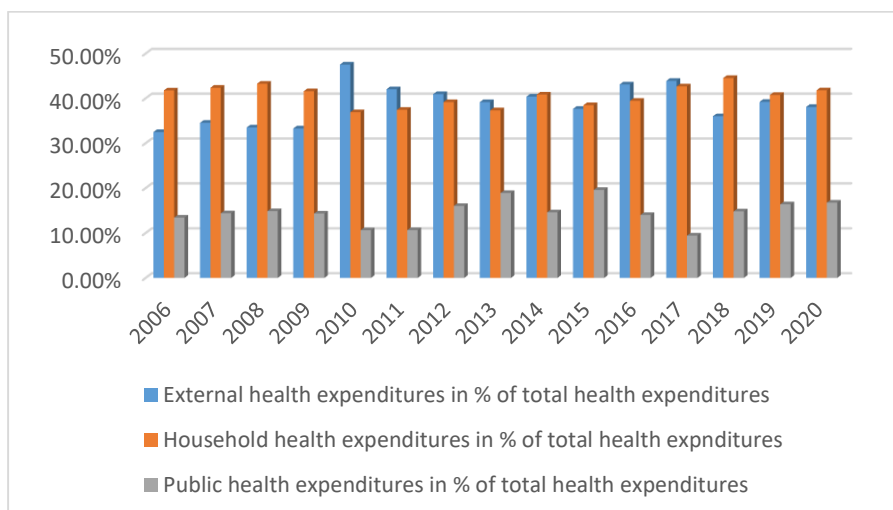
Graph n°3: Magnitude of expenditure in the health sector by source of financing from 2008 to 2020 (in %)
Source: Developed by the author, based on CNS data, 2020

According to the observation of the graph above, following the numerical order of importance, households contribute with a significant share in the financing of the health sector, the external and public sector come respectively in second and last position during the study period. An overrun of coverage expenditure by the rest of the world of 47.54% against 37.00% in 2010, 46.97% against 37.00% in 2011 and a slight overrun of 43.89% against 42.66 % in 2017.

Among these different sources, there are important sources: mutual health insurance which also finances care, the average amount of which amounts to 7.18% which is not negligible. Overall, households remain the major economic agent in the direct and indirect financing of health in the DRC.

2. Econometrics

This analysis makes it possible to identify the influence between the basic variables of approach in relation to access to health care for households affiliated to the mutual health insurance, based on 65 observations collected from members of the Mutual health insurance of Kinshasa.

The estimation results show that no variable is significant at the 5% threshold, also proven by Chi-square which is not significant at the same threshold. The value of R^2 Nagelkerke indicates that the contribution of the explanatory variables in the explained variable is 10.2%. The estimation of the Logit model made it possible to verify in a disaggregated way the influence of each modality at the level of the variable of interest. The model captured 93.8% of the information from the explanatory variables. (See table 1 and 2).

Table 1. Contingency analysis, presentation of Logit results

		B	S.E.	Wald	df	Sig.	Exp(B)
Gender	Female						
	Male	-0.579	1 362	0.180	1	0.671	0.561
Revenue range	< 100 0000						
	100.000CDF-290.000CDF	0.799	1 366	0.342	1	0.559	2 223
	300.000-490.000CDF	-0.744	1 703	0.191	1	0.662	0.475
	500.000-690.000CDF	19 156	23 158 456	0.000	1	0.999	208 571 219 515
	> 690.000 CDF	18 374	28 420 722	0.000	1	0.999	95 433 883 342
Revenu allowing access to health care	No						
	Yes	0.427	1 327	0.104	1	0.747	1 533
Bearable cost of the co-payment	No						
	Yes	0.146	1 339	0.012	1	0.913	1 157
Third-party payment fees protect the revenu	No						
	Yes	-0.532	1 235	0.185	1	0.667	0.588

				2 787	1 928		2 091	1	0.148	16 236
Constant										
Cox & Snell R Square: ,038		Chi-square : ,961								
Nagelkerke R Square : ,102										

Source: Our surveys, 2022

Table 2. Model prediction

	Observed		Predicted		
			Do you get coverage		Percent Correct
			No	Yes	
Step 1	Do you get coverage	No	0	4	.0
		Yes	0	61	100.0
	Overall Percentage				93.8

Source: Our surveys, 2022

V. CONCLUSION

We will retain from our theoretical analyzes on the one hand that; public health finances display several constraints: low allocations and execution of expenditure, dependence on external resources. The practice of mutualism to facilitate access to health care for households is of proven importance. The case of MUSAK certainly reflects the possibility for households to group together through mutual health insurance which offers and thus obtains a form of voluntary health insurance.

It follows from our estimates of the proposed Logit model that the basic variables taken into account do not significantly influence access to health care, because their probabilities are greater than the 5% threshold, which means that access health care from MUSAK is non-discriminatory.

Regular and prompt membership of a mutual health insurance fund allows households to access health care without taking into account the determinants of access to health care, including gender, income level, cost of care, cost *of the co-payment*, third-party payment costs. This membership would therefore reflect a mutual insurance alternative to guarantee access to health care for households that need it and are more vulnerable. However, it would gain credibility and effectiveness if it receives substantial support from the public authorities, which would enable it to ultimately achieve *universal* health care coverage.

Compared to the behavioral approaches proposed, community mutual insurance, in DR Congo, would constitute a strategic axis for access to household health care in the context of high costs.

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