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Bribery in Cameroonian Public Hospitals: Who Pays and How Much?

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Abstract

This paper deeply analyzes the characteristics of corrupters during consultation in the Douala public hospitals, as well as the amounts of bribe they pay. A survey of patients in these hospitals reveals that the majority of bribes paid during consultation is between 1,000 and 3,000 CFA Francs, interval which corresponds to the 25th and 75th percentile of the amounts of bribe paid respectively. Our estimates indicate that for the amounts of bribe paid falling within this interval, it appears that the rich, the women, the older and the more educated are more likely to corrupt practices. However, when such amounts are set outside of that interval, the amounts of bribe paid and the characteristics of corrupters are no more the same as before. This contradicts for instance to some extent some theoretical results that do not include the setting of the level of bribe. It finally emerges from our analysis that with regard to each of the characteristics highlighted, correspond specific amounts of bribe paid, which are related to the socio-professional and socio-demographic categories of patients. In particular, senior staffs and business men / contractors would be most likely to pay bribes, whatever the amount.

Keywords: Bribery, Prevalence rate, Odds ratio, Percentile, Health services, Cameroon.

Contents

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1. Introduction

The empirical literature on corruption has identified the causes and consequences of the phenomenon in the health sector in many countries. Gupta *et al.* (2002) established from a study based on 71 countries, that the countries highly affected by corruption showed the highest infant mortality rates than others, even after adjustment based on income, girls' schooling, health spending and urbanization. Mauro (2002) showed that corrupt countries spend less on education and health. In the same vein, Lavallee *et al.* (2010) highlighted in a study of 18 countries that corruption would lead to a reduction of public expenses in health, education and social protection sectors. The works of this literature are important because they have led to a better understanding of corruption in the health sector and, consequently, to the proposal of relevant measures against the phenomenon. For instance, there is evidence that by increasing the transparency and obligation to give account in public health services, the level of corruption will decrease (Vian, 2008). However, these works have at least one shortcoming because they do not inform us about the corrupt exchanges practiced between caregivers and patients. Indeed, these works explore the Transparency International corruption indexes (TI), those of the Political Risk Services / International Country Risk Guide (PRS / ICRG) and those of the World Wide Governance Indicators (W.W.G.I) of the World Bank, which derived from the surveys made from investors plying the world's countries, but who are not in touch with health care personnel in public hospitals of those countries.

Yet, in recent years, the availability of microeconomic data (from companies and households) on corruption provides the opportunity to better understand the causes and consequences of the phenomenon. However, up to date, and despite a recent commitment, microeconomic studies on this topic remain limited, and confined to certain geographical areas such as the Eastern Europe (Balabanova and McKee, 2002; Lewis, 2002) and Latin America (Hunt, 2004; Hunt and Lazlo, 2005; Seligson, 2006). Although Africa is one of the world's areas where corruption is very acute, very few microeconomic studies on this phenomenon are devoted to this continent. Certainly, thanks to the Afro-barometer project based on surveys of households conducted in 18 countries in Sub-Saharan Africa, works on this theme have being multiplied. These works relate in particular to the relationship between corruption and trust, or satisfaction in public institutions (Bratton, 2007; Cho and Kirwin, 2007; Lavallee *et al*., 2010). But this project has at least one gap. It omits some African countries, which however, are sometimes classified among the most corrupt countries of the world. It is the case of Cameroon which ranked first of corrupt countries successively in 1998 and 1999.

In Cameroon, the National Institute of Statistics (Institut National De La Statistique, 2011) studied, from a survey of households in 2007, corrupt practices in the health sector. This study is important because it helps to know that annually, each patient pays an average bribe amounting to 1,089 CFA Francs for consultation and medical care. But it is limited insofar as it does not inform us neither on socio-demographic characteristics (age, education, gender, income) of such a patient, nor about different amounts of bribe he/she pays. The purpose of this study is therefore to fill this gap, as part of a field survey[1] conducted among 407 patients in public hospitals of the city of Douala in Cameroon. According to this survey, the majority of bribes paid during consultation is between 1,000 CFA Francs and 3,000F CFA, amounts representing respectively the bribes corresponding to the 25th and the 75th percentile of the amounts paid. This interval which represents not only the modal class, but also the median and the mean class, was used as reference to highlight the characteristics of individuals who pay bribes not only in amounts below and above these percentiles, but also those in this interval.

In general, the theoretical literature suggests that holders of low incomes, young people and women are respectively less exposed to corrupt practices than holders of higher incomes, older people and men (Lavallee *et al*., 2010). However, the results obtained in this study rather discuss those presented by the theoretical literature because by setting the amounts of bribes paid below or beyond the above mentioned percentiles, individuals' characteristics vary depending on the set percentile. Thus, if for example we take income into account, theoretical expectations are more or less verified by our results, insofar as when the bribe amount is set beyond the 75th percentile, holders of 250,000 CFA Francs income and less, will tend to pay more bribes to a certain amount (under 1,000 CFA Francs) than those with a higher income of 250,000 CFA Francs; on the contrary, if the amount of bribe paid is set beyond the 25th percentile, it is rather the holders of income of more than 250,000 CFA Francs who will tend to pay bribes of a different amount (less than 3,000 CFA Francs). In principle, it was expected that the same trend be observed regardless of the amount of bribe paid, which unfortunately is not the case.

The purpose of such a study therefore lies in the fact that not only it allows to identify the profile of those most exposed to the phenomenon, but also, it constitutes a basis for the proposal of the most appropriate anti-corruption measures. Because of the secret nature of corruption (Shleifer and Vishny, 1993) many researchers discuss the characteristics of people who are often victims of the phenomenon without mentioning the amounts. On the contrary, this study presents, analyzes and discusses these amounts. The inclusion of the latter is particularly important as in some countries, they are socially acceptable and justified as a way to compensate public health professionals who are poorly paid, or it is an understandable reaction from people who might have an urgent need of health care (Savedoff and Hussmann, 2006).

The second section briefly presents the Cameroonian health system while highlighting the causes and corrupt practices. The implemented methodology and the description of characteristics of the sample used form the basis of part three. As for Section four, its models while considering the characteristics of patients victims of the phenomenon. The results of different estimates obtained are discussed in section five, and section six concludes the presentation.

[1]Survey funded by the African Economic Research Consortium in Nairobi, Kenya in 2009

2. Health, Health Care and Corruption in Cameroonian Hospitals

2.1. Health and Health Care

During the last two decades, Cameroonian populations have made some progress in the evolution of their health status as shown by some indicators, including the infant mortality rate(IMR), the neonatal mortality rate(NMR) and the juvenile mortality rate (JMR) shown in the Table below.

Table-1. Douala Health indicators (1990-2011)

		1991	1998	2004	2011	2015[2]
Neonatal mortality rate(per 1,000births)	Cameroon	33,1	37,2	29	31	
	Douala	36	28,3	30	33	
	Rural zone	42,9	44,3	37	35	
Infant mortality rate(per 1,000births)	Cameroon	65	77,0	74	62	75,6
	Douala	67,2	51,5	55	54	
	Rural zone	86,1	86,9	91	77	
Juvenile mortality rate(per 1,000births)	Cameroon	65,6	79,9	75	63	
	Douala	38,6	41,9	40	23	
	Rural zone	79,7	80,2	85	82	
Maternal mortality rate(100,000 births)	Cameroon	454	430	669	782	344

Sources: INS (1991; 1998; 2004; 2011)

In this table, the neonatal mortality rate as well as the infant mortality rate has dropped from 1991 to 2011 respectively from 36 to 33 per thousand, and from 38.6 to 23 per thousand for the city of Douala. At the same time, the neonatal mortality rate has dropped from 36 per thousand to 33 per thousand. In the whole country, these rates decreased from 33.1 to 31 between 1991 and 2011 for the neonatal mortality rate, and from 65 to 62 during the same period for the infant mortality rate. These improvements, however, are still insufficient, due in part to malfunctions of the offer of services in public hospitals.

In Cameroon, the health sector comprises three sub-sectors: the public, the private and the traditional. In general, the public sub-sector is the most important because not only it is the major provider of medical services, but in addition, it regulates all activities related to it. Unfortunately, this sub-sector does not have sufficient human and material resources to meet the demand for care. For instance, as far the personnel is concerned, public hospitals in Douala have an average of eight medical doctors for a population of 159,211 inhabitants, that is, 19,901 inhabitants per doctor (Institut National De La Statistique, 2010). The WHO's (World Health Organization) standard is one medical doctor per 10,000 inhabitants. Compared to this standard, every doctor is required to accommodate on average a surplus of 4,211 patients. These doctors are therefore overworked. Moreover, in early 1990, civil servants' salaries, including those of health workers, have been reduced by over 50%. Wage increases of about 5%, 15% and 5% made meanwhile did not allow these workers to recover their former purchasing power. Impoverished employees have therefore turned to the corrupt maneuvers to try to improve their living conditions.

Thus, following the Bamako Initiative[3], the government adopted a new policy based on the decentralization of service delivery, focusing on primary health care and the participation of beneficiary communities to the financing and management of public health services establishments, given the virtual absence of health insurance. Since then, households[4] must pay for the services officially offered to them in public hospitals. To these official payments are added some irregular payments.

2.2. Corruption in Health Services

Access to basic social services including health is a constant concern for the Cameroonian public authorities. But the efforts that they are making, with the support of development partners to facilitate access to these services, are unfortunately affected by corruption. Indeed, after ECAM3[5], nearly 85% of households' heads living in urban and semi-urban areas feel that the level of corruption in the health sector is high in this country. But the magnitude of the phenomenon varies from one region to another (69.8% to 61.1% in Douala and Yaoundé). For example, during consultation, corruption occurs mainly through the payment of non-regulatory fees and through the interventions of personalities to be quickly served and avoid waiting for a long time (INS, 2011). Patients in public hospitals also complain of the unavailability of medical doctors. This unavailability can be explained by the fact that private health facilities that accompany the government in the offer of health services to populations mostly have as promoters, medical doctors working in the public sector. Many patients who visit public health facilities are oriented by these doctors to their private health centers for their medical care.

Therefore, being interviewed on their perception of the level of corruption in the health sector as parts of the households' survey in 2007, almost six out of ten households in the city of Douala believe it is high. This reflects a general malaise. As a matter of fact, if access to basic social services including health is a constant concern for public authorities, corruption in the health sector is like a gangrene which tends to negate the efforts made by the State (INS, 2011).

[2] Projection

[3] The Bamako Initiative is the result of the summit as WHO and UNICEF in collaboration with African countries held in 1987 in Bamako.

[4] This policy certainly has the advantage of increasing the necessary resources for the functioning of these hospitals. But it has the disadvantage to oust the less rich households of the public health services market.

[5] ECAM3 is the last *Cameroonian household surveys conducted seven years ago*

3. Methodology and Descriptive Statistics

To highlight the characteristics of patients who pay bribes during consultation in the Douala public hospitals, we initially determined the sample's size of individuals to interview and then, through odds ratios, we established a typology of patients' characteristics whose bribe amounts are below and above the 25th and 75th percentiles, given that each of the percentiles was previously set. A typology of patients' characteristics whose bribe amounts are inside the modal class, that's to say, between the 25th and 75th percentile, given the socio-professional category of the victim, has also been highlighted.

3.1. Determining the Sample

As we were unable to determine an approximate P value through a prior survey (because to our knowledge, no investigation about corruption in public hospitals has yet been carried out in Cameroon), that is to say, the proportion of respondents in the context of a preliminary study, we set P to 0.5, this value representing the worst case, that is to say, the value which gives the greatest possible standard deviation for the sampling distribution of $\overline{P}$. In this case, the required sample size to ensure a margin error E (in absolute value) not exceeding 5% with a confidence level of 95% will be about (Baillargeon, 1989):

$$n = \frac{Z^2_{\alpha/2}(0,5)(0,5)}{E^2} = \frac{Z^2_{\alpha/2}}{4E^2} = \frac{(1,96)^2}{4(0,05)^2} \approx 384 \quad \text{.....(1)}$$

E: the error margin; Z: the standard normal distribution; $\overline{P}$: The estimator of P in the preliminary study. The distribution of the number of individuals to be interviewed is done from the number of medical and paramedical staff in each hospital selected as shown in the table below:

Table-2. The distribution of the number of patients to be interviewed by hospital.

Hospital	Staff Number	Importance of the hospital (in %)	Number of patients to be interviewed
Laquintinie	630	41	157
General	326	21	81
New-Bell	113	7	27
Bonassama	103	7	25
Cite des Palmiers	100	6	25
Deido	84	5	21
Logbaba	80	5	20
Nylon	62	4	15
Bonamoussadi	57	4	14
Total	1 555	100	384

Source: Our estimates based on information collected at the Regional Health Delegation of Littoral on the number of hospitals

The first column describes the type of hospital, the second column the total number of medical and paramedical staff, the third indicates the weight or importance of the personnel of each hospital as compared to the staff of all the hospitals in general, and the last column, the approximate number of people who should be interviewed by hospital, based on the weight of each hospital. We came up with a total of 384 interviewees. For prudence sake, we distributed 415 questionnaires with the assumption that all incorrectly completed questionnaires would be eliminated, this to help approximately achieve the sample's size. Thus, 407 questionnaires were filled out correctly and therefore validated. It is on the basis of these 407 questionnaires that the analysis was performed.

3.2. Some Descriptive Statistics

Following the questioning of 407 patients, we obtained by hospital the average amounts of bribe, as well as the prevalence rates of the phenomenon.

3.2.1. Characteristics of the Sample

The table below specifies the characteristics of the patients' sample: age, school level (education), income, marital and employment status (Yamb and Bayemi, 2015):

Regarding the age characteristic, it has been split into two categories: young people between 20 and 40 years old and the old over forty years old. This nomenclature at the age level reflects the country's socio-economic situation as concerns employment insofar as four years ago, authorities launched a recruitment campaign in the public sector for the youth (25,000 in total), thus considering as young any person aged forty and less. The income characteristic also obeys to this dualistic nomenclature, that is, those with an income of 250, 000 CFA Francs and less, and those who earn more than 250,000 CFA Francs. This classification took into account the socio-economic characteristics of the respondents[6] . This choice is justified by the fact that initially, we considered four classes of income namely less than 75,000, between 75,000 and 150,000, from 150, 000 to 250,000 and the class of more than 250,000. It is worth mentioning that among the 407 respondents, almost 83% have an income of 250,000 and less, and only about17% earn more than 250,000.This latter percentage represents the senior staffs in companies and businessmen/contractors, who are considered in the Cameroonian environment as people belonging to the richest social class. 80% of the first mentioned earn more than 250 thousands CFA Francs, and nearly 50% of the second category as much, hence the justification for the classification in terms of income distribution in the two categories, that is, 250,000 and under, and above 250,000. This is also applied to the education variable where two categories were retained: higher level and no higher level

[6]In the Appendix is presented the table of income levels based on socio-professional categories

Table-3. The characteristics of patients' sample

	Male	Female	Total	% Male	% Female	Total %
Age						
40 years old and Less	134	190	324	41,4	58,6	100
More than 40 years old	52	31	83	62,7	37,3	100
Education						
Primary and secondary Education	97	145	242	40,1	59,2	100
Higher Education	89	76	165	53,9	46,1	100
Average monthly Income						
Less than 75, 000 CFA Francs	78	106	184	42,4	57,6	100
Between 75,000 and 150, 000	48	52	100	48	52	100
Between 150,000 and 250, 000	26	28	54	48	52	100
More than 250,000	35	34	69	50,7	49,3	100
Matrimonial Status						
Married	72	99	171	42,1	57,9	100
Single	74	82	156	47,4	52,6	100
Divorced	10	9	19	52,6	47,4	100
Other	30	31	61	49,2	50,8	100
Socio-professional Category						
Senior staff	17	7	24	70,8	29,2	100
Control Agent	21	14	35	60	40	100
Enforcement officer	22	15	37	59,5	40,5	100
Contractor (Business man)	25	4	29	86,2	13,8	100
House Wives		55	55		100	100
Trader	25	42	67	37,3	62,7	100
Unemployed	30	29	59	50,8	49,2	100
Others (informal)	46	55	101	45,5	54,5	100
Total	186	221	407	45,7	54,3	100

Source: Our Surveys' Results

3.2.2. Average Amount of Bribes Paid During Consultation in Public Hospitals

The diagram and table below show for each hospital the real cost for consultation, taking into account the bribe paid by the patient. In general, in each hospital, corruption makes more expensive the consultation cost of a patient as indicated in the graph and table below:

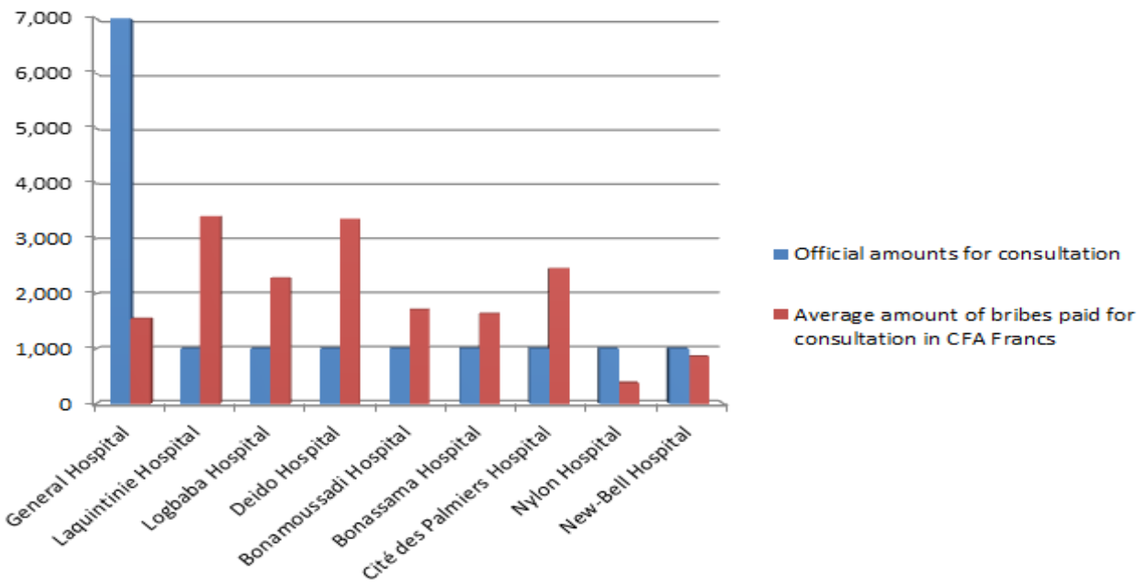

Diagram-1. Comparison between the official price and the average bribe during consultation

Table-4. Average Bribe

List of Hospitals	Official amounts for consultation	Average amount of bribes paid for consultation in CFA Francs	Real total amount for consultation
General Hospital	7 000	1548	8 548
Laquintinie Hospital	1 000	3411	4 411
Logbaba Hospital	1 000	2286	3 286
Deido Hospital	1 000	3363	3363
Bonamoussadi Hospital	1 000	1714	2 714
Bonassama Hospital	1 000	1636	2 636
Cité des Palmiers Hospital	1 000	2460	3 460
Nylon Hospital	1 000	375	1 375
New-Bell Hospital	1 000	857	1857

Source: Hospitals Survey and authors' calculations

We also identified for all hospitals in general some statistics (percentile and mode), useful in determining the characteristics of those who pay amounts of bribe. We use the table below to determine these measures:

Table-5. Amount of bribes paid (in CFA[7] Francs) per scale

Amount of bribes		Classes	Frequency	Percentage
	0 to 1,000	1	122	30.0
	1,000 to 3,000	2	128	31.4
	3,000 to 5,000	3	102	25.1
	5,000 to 7,000	4	55	13.51
	Total		407	100.0

This table shows the proportion of patients who pay bribes depending on amounts. It shows that the amounts mostly paid are in class 1 and 2 (below 1,000 and between 1,000 and 3,000). Class 4 meanwhile shows the proportion of the least bribe paid. From the above table, the following statistics were obtained:

Table-6. Some descriptive statistics on amounts of bribe paid (in CFA Francs)

Characteristics		Values	Rounded Values
Mean		2442	2500
Asymmetry Coefficient (Skewness)		0.335	0.335
Kurtosis coefficient		-0.986	-0.986
Mode		1936.29	2000
Percentiles	25	834	1000
	50	2300	2500
	75	3083.33	3000

This table shows the calculated real values and the rounded values. To simplify the presentation, we have rather considered the last, insofar as they more reflect the reality of the amounts of bribe paid which are usually **whole** numbers (round), not followed by pennies. Considering for example the mean bribe, we have put it to 2,500 instead of 2,442. (In fact, it will be easier in practice for a patient to pay an amount of 2,500 instead of 2,442).

Bribes corresponding to the 25th and 75th percentiles were selected as reference in our analyzes since Class 2, that is, 1,000 to 3,000 that contains these percentiles, is also the modal, the mean and the median class; in other words, the mean (2,442), the median (2,300) and the mode (1939.29) are in this class. It therefore appears that 2,000 would be nearly the amount of bribe paid the most by patients, and with a positive asymmetry coefficient (0.335), it appears that the majority of bribes paid tend to larger amounts as compared to the mean of bribes.

3.2.3. Prevalence Rates during Consultation

The questionnaire on corruption allowed us to collect information on the phenomenon. However, it was not about corruption itself, but about opinions the actors expressed as far as this scourge is concerned. To achieve this goal, the questionnaire was administered to patients outside the hospital, so that they are not influenced by hospital staff considered as their 'executioners'. We asked each respondent's opinion regarding the affirmation that corruption is practiced in the consultation service of the public hospital he/she frequents most. To achieve this goal, we used a Likert scale that allowed respondents to have five response options namely, not at all agree, disagree, indifferent, agree, and strongly agree. It was for the concerned to choose the option that best describes their feelings about the following statement: *"The patient who wants to be consulted must pay the official fees plus the bribe."* The choice of the last two options simply means that for the patient, corruption is practiced during consultation insofar as medical doctors abusively use the public responsibility entrusted to them to push their patients to corrupt. We subsequently assigned to each of the response options of this scale, a score n_i which indicates the level of corruption. The n_i varies from 1 to 5. For instance, if i = 1, the level of corruption is $n_i = n_1 = 1$. This is the lowest score corresponding to the view that the respondent does not agree at all that corruption is practiced in the consulting service of the hospital that he/she frequents the most. On the contrary, if i equals to 5, the level of corruption is $n_i = n_5 = 5$. This is the highest score corresponding to the view that the respondent all agrees that corruption is practiced in the hospital he/she frequents the most. On this scale, when we go from $n_1 = 1$ to $n_5 = 5$, the level of corruption increases. At the end of the survey, we counted the number (f_i) of respondents who chose the level of corruption $n_i (i = 4;5)$ relative to each hospital. The prevalence of corruption during consultation and by hospital was therefore determined as follows: $\sum_{i=4}^{5} f_i n_i$, the following table showing the prevalence rates for each hospital.

Table-7. Prevalence rates (in %) during consultation

HOPITALS LIST	Prevalence Rate (in %) during consultation
General Hospital	20.5
Laquintinie Hospital	76.5
Logbaba Hospital	19
Deido Hospital	81.8
Bonamoussadi Hospital	64.3
	Continue

[7] 1 euro is approximately equal to 656.56 FCFA

Bonassama Hospital	42.4
Cité des Palmiers Hospital	52
Nylon Hospital	12.5
New-Bell Hospital	39.3
Hospitals Average	45.36

Source: Estimations from the survey data

4. Statistical Estimate of Patients' Characteristics Victims of the Phenomenon

We will highlight the characteristics of patients' victims of corruption during consultation through an estimate by odds ratios, while identifying the bribe amounts paid by the same patients. The age, income, educational level and gender variables were selected for the occasion. The estimate through odds ratios were apprehended by the construction of the following 2x2x2[8] contingency table, this for each of the characteristics studied.

Table-8. Contingency table of 2*2*2 dimension

Setting amounts below and above the percentile i	**Variation of amounts below and beyond the percentile j**	**Patients' Characteristics**	
		C_1	**C_2**
$<C_i$	$<C_i$	N_{11}	N_{12}
	$>C_j$	N_{21}	N_{22}
$>Ci$	$<C_i$	N_{11}	N_{12}
	$>C_i$	N_{21}	N_{22}

Sources: Authors' Conception

N_{11} and N_{21} represent respectively the number of people of modality1 (C_1) of characteristic C, which bribe amounts paid vary above and below the percentile j respectively, given that the amounts were set below and above the percentile i. The same interpretation can be applied for modality 2 (C_2) for the numbers N_{12} and N_{22}.These different joint distributions N_{ij} were used to calculate the following conditional (partial) odds ratios:

$$\theta_{ij/c_i} = \frac{N_{11}N_{22}}{N_{12}N_{21}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(2)$$

Each of the different contingency tables of dimension 2x2 obtained when the amounts of bribe paid are set below and beyond the percentile i, contains the different features identified above, and divided into two terms as previously explained namely: age (40 and under and over 40 years), income (250,000 and under and over 250,000), educational level (not higher and higher), gender (male and female). The estimates θ_{ij/c_i} with their confidence intervals are found in Tables 9 and 10 below.

Highlighting the characteristics of individuals for different amounts of bribe paid was made by setting one of the corresponding bribe amounts either to the 25th percentile or to the 75th percentile (which corresponds to the first and third quartile respectively),while varying the other based on different characteristics: in each of the situations studied, one of the quartiles is regarded as a control variable, and the other as a variable able to explain the characteristics of patients for the different amounts of bribe paid. Thus, if we set for instance the third quartile which is 3,000, this will lead us to study the characteristics of patients for the amounts of bribe paid, that are above and below this quartile (<3,000 or > 3,000), for amounts of bribe paid which are higher or lower to those corresponding to the first quartile.

However, we note that the study of patients' features only makes sense for bribes set lower to the third quartile $[0;Q_3[$. This interval includes the amounts of bribe paid between the first and the third quartile $]Q_1;Q_3[$, and those below the first quartile $[0;Q_1[$

For bribes above this amount (third quartile), the relationships studied will have no meaning insofar as variations related to the first quartile (< 1,000 and > 1,000) which are supposed to explain the characteristics of individuals , given the amount set beyond the third quartile, do not belong to the interval which corresponds to amounts above 3,000. On the contrary, these variations belong to the interval for bribes paid which are set below 3,000 as shown in the diagram below.

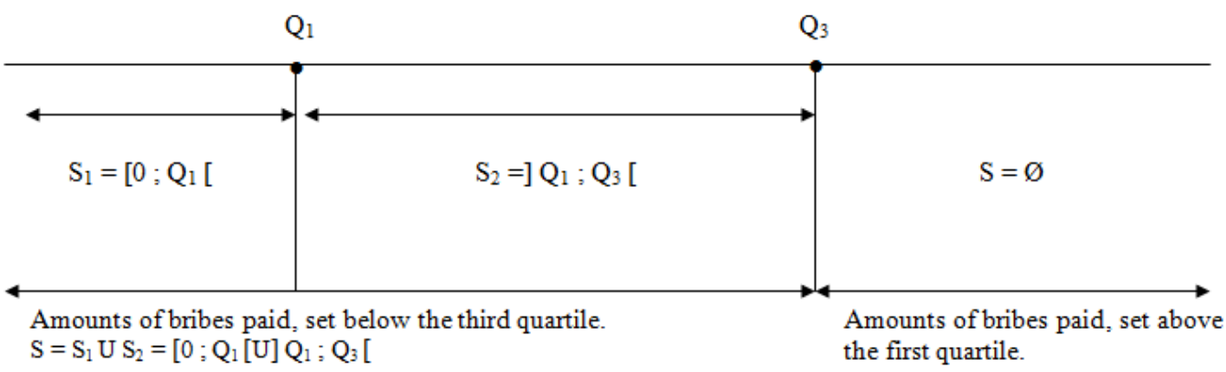

Diagram-1.

[8]Note that each of the characteristics studied has two modalities namely the amounts of bribe paid, set above and below the percentile i ($<C_i$ and $>Ci$) for the control variable C_i, the amounts of bribe paid set below and beyond the percentile j able to explain the characteristics of patients i for the independent variable C_j ($<C_j$ and $>Cj$), and finally, the characteristics of patients for the dependent variable C (C_1 and C_2)

Also, for bribes set higher or lower to the first quartile, the field of study is valid only for bribes paid, only set above the first quartile: these bribes allow us to highlight the characteristics of individuals based on changes of bribes paid below or above the third quartile (<3,000> 3,000), the latter belonging to the study field.

Thus, for bribes set above the first quartile $]Q_1;\infty[$, the study is carried out on bribes paid between the first and the third quartile $]Q_1;Q_3[$ on the one hand, and on bribes paid above the third quartile $]Q_3;\infty[$ belonging respectively to the interval of the study on the other. However, bribes paid set inferior to the first quartile cannot be taken into account insofar as this interval $[0;Q_1[$ does not contain the amounts of bribe above or below the third quartile, and which may explain the characteristics of patients. The diagram below well illustrates these different variations.

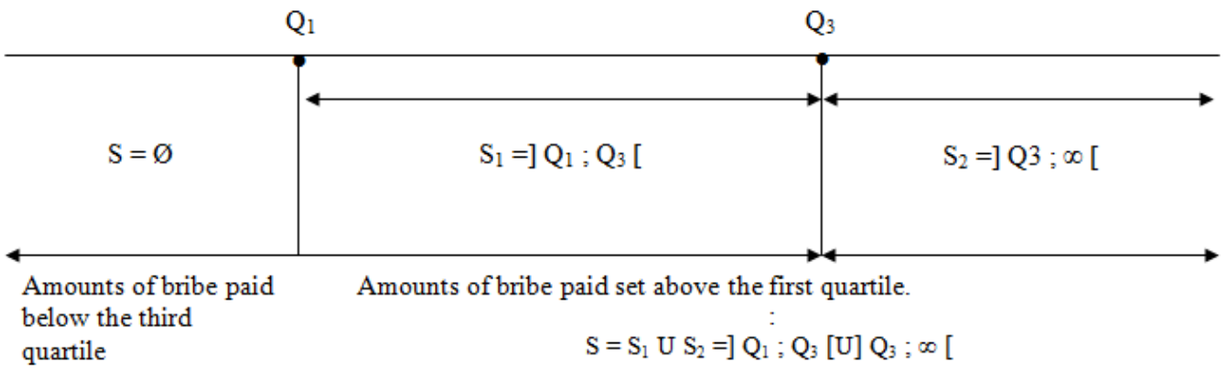

Diagram-2.

Tables 9 and 10 below respectively study the characteristics of patients victims of corruption during consultation for bribes paid set below and beyond the 75th and 25th percentiles respectively ,this for amounts of bribe higher or lower to those corresponding to the 25th percentile on the one hand, and to the7 5th percentile on the other.

Table-9. Estimate of individuals' characteristics for amounts of bribe below the75th percentile

Amounts of bribe paid set below the 75th percentile for bribes paid higher or lower than those corresponding to the 25th percentile	Sex		Income		School Level		Age	
	$\hat{\theta}_{SD/M}$	Confidence Interval to 95% of $\hat{\theta}_{SD/M}$	$\hat{\theta}_{RD/M}$	Confidence Interval to 95% of $\hat{\theta}_{RD/M}$	$\hat{\theta}_{ND/M}$	Confidence Interval to 95% of $\hat{\theta}_{ND/M}$	$\hat{\theta}_{AD/M}$	Confidence Interval to 95% of $\hat{\theta}_{AD/M}$
Less than 1,000	120.43	(7.28 ; 1990)	235.25	(14.44 ; 3830)	175.9	(10.43 ; 2885)	218.99	(13.43 :3569)
Above 1,000	0,008		0.0042		0.0056		0.004	
Estimate disregarding the amounts of bribe paid below or above the 75th percentile	$\hat{\theta}_{SD}$ =148.76	(20.55 ; 1076)	$\hat{\theta}_{RD}$ = 162.75	(21.46; 1234.2)	$\hat{\theta}_{ND}$ =151.28	(20.82;1099)	$\hat{\theta}_{AD}$ =162.54	(21.44; 1232.3)

Source: Our estimates from the survey data

Table-10. Estimate of individuals' characteristics for bribe amounts above the 25th percentile

Amounts of bribe paid set beyond the 25th percentile for bribes paid higher or lower than those corresponding to the 75th percentile	Sex		Income		School Level		Age	
	$\hat{\theta}_{SD/M}$	Confidence Interval to 95% of $\hat{\theta}_{SD/M}$	$\hat{\theta}_{RD/M}$	Confidence Interval to 95% of $\hat{\theta}_{RD/M}$	$\hat{\theta}_{ND/M}$	Confidence Interval to 95% of $\hat{\theta}_{ND/M}$	$\hat{\theta}_{AD/M}$	Confidence Interval to 95% of $\hat{\theta}_{AD/M}$
Less than 3,000	1.36	(0.02; 69.46)	0.20	(0.004 ; 10.46)	0.71	(0.01 ; 36.54)	0.31	(0.006 :16.08)
Above 3,000	0.73		5		1.40		3.22	
Estimate disregarding amounts of bribe paid below or above the amount of the 25th percentile	$\hat{\theta}_{SD}$ =0.91	(0.55 ; 1.48)	$\hat{\theta}_{RD}$ = 0.65	(0.33 ; 1.27)	$\hat{\theta}_{ND}$ =0.99	(0.60;1.63)	$\hat{\theta}_{AD}$ =0.75	(0.40;1.41)

Source: Our estimates from the survey data

In Table 9 we find that for bribe amounts set below the 75th percentile, the odds of men are about 120 times higher than that of women, to pay amounts less than 1,000 CFA Francs, instead of paying amounts over 1,000 CFA Francs. This is also true for people with an income of 250,000 CFA Francs and less (their odds are about 235 times higher to pay less than 1,000 CFA Francs instead of paying more than 1, 000 CFA Francs, compared to those with an income of more than 250,000 CFA Francs). People without a university level and the young also fall within this category, with odds of about 176 and 219 times higher than those with a university level, and the less young respectively. An estimate without taking into account the amounts of bribe paid set below or above the 75th percentile confirms the above interpretation. In fact, conditional (partial) odds ratios move in the same direction as the marginal odds ratios, and this, whatever the characteristic studied. The table below summarizes the characteristics of patients based on amounts of bribe paid set below the 75th percentile, for bribes paid higher or lower than those corresponding to the 25th percentile.

Table-11. Characteristics of patients for amounts of bribe paid during consultation, set below the75th percentile

Amount of bribe paid	**Sex**	**Income**	**School Level**	**Age**
	Male (M_1) Female (F)	**250,000 and less (M_2) above 250,000 (P_1)**	**Not superior (P_2) Superior (S)**	**40 years and less (M_3) Above 40 years (P_3)**
Less than 1,000 CFA Francs	M_1	M_2	P_2	M_3
Above 1,000 CFA Francs	F	P_1	S	P_3
Estimate independently of amounts of bribe paid set(<3,000 or >3,000)	M_1	M_2	**P_2**	M_3

Sources: Our conception from the data in Table 9

This table presents and summarizes the profile of patients who pay amounts of bribe below or above 1,000 CFA Francs, knowing that the amounts of bribe studied are those below 3,000, while also bringing out the profile of patients when amounts of bribe paid, set below and above 3,000 CFA Francs, are not taken into account.

In table 10 our estimates show that for the amounts of bribe set above the 25th percentile, the odds of men are about 1.36 times higher than that of women, to pay amounts less than 3,000 CFA Francs instead of paying amounts over 3,000 CFA Francs. On the contrary, for those with less income, their rating is about 5 times higher than those with higher income, to pay amounts of more than 3,000 than less than 3,000. It is the same for those who do not have a higher Education level who are about 1.4 times more likely, than those who have to pay amounts over 3,000 than less than 3,000. The less young fall into this category where the trend is to pay amounts over 3,000 than less than 3,000. Their odds are about 3.22 times higher than that of the younger.

However, our estimates show that if we do not take into account the amounts of bribe paid set above the 25th percentile, women tend more to pay amounts less than 3,000 than those over 3,000 as compared to men. As far as income is concerned, we have the same pattern as when the amounts of bribe paid are set beyond the 25th percentile, that is, those with lower income will tend to pay amounts of more than 3,000 than amounts less than 3,000. At the school level, with an odds ratio substantially equal to 1, we conclude that whatever the school level, the levels of bribe paid hardly differ from one category to another. Finally, concerning age, results also confirm the trend that when bribes are set beyond the 25th percentile, young people have a higher rating than older people to pay amounts of more than 3,000, than less than 3,000. The following table summarizes the profiles of one another, for amounts of bribe paid below or above the 75th percentile, as the studied bribe amounts are those above the 25th percentile.

Table-12. Characteristics of patients for amounts of bribe set above the 25th percentile during consultation

Amount of bribe paid	**Sex**	**Income**	**School Level**	**Age**
	Male (M_1) Female (F)	**250,000 and less (M_2) Above 250,000 (P_1)**	**Not superior (P_2) Superior (S)**	**40 years and less (M_3) Above 40 Years (P_3)**
Less than 3,000 CFA Francs	M_1	P_1	S	P_3
Above 3,000 CFA Francs	F	M_2	P_2	M_3
Estimate independently of amounts of bribe paid set(<1,000 or >1,000)	F	P_1	S et P_2	M_3

Sources: Our conception from data in table 10

As previously stated, this table presents the profile of patients who pay amounts of bribe below or above 3,000 CFA Francs, knowing that the amounts of bribe paid are those set above 1,000. It also presents the profile of patients when amounts of bribes paid set below and above 1,000CFA Francs are not taken into account. The table below summarizes while comparing the two eventualities of tables No.9 and10.

Table-13. Summary of Tables 11 and12 and profiles comparison

	Bribes paid set below the 75th percentile (<3,000)		**Bribes paid set above the 25th percentile (>1,000)**	
Characteristics	**Less than 1,000**	**Above 1,000**	**Less than 3,000**	**Above 3,000**
Sex	M_1	F	M_1	F
Income	M_2	P_1	P_1	M_2
School level	P_2	S	S	P_2
Age	M_3	P_3	P_2	M_3
Estimate with no consideration of set bribes paid				
	Not taking into account the bribes paid set below and above the 75th percentile (<3,000> 3,000)		Not taking into account the bribes paid set beyond and below the 25th percentile (> 1,000 <1,000)	
Characteristics	Less than 1,000	Above 1,000	Less than 3,000	Above 3,000
Sex	M_1	F	M_1	F
Income	M_2	P_1	P_1	M_2
School level	P_2	S	S et P_2	S et P_2
Age	M_3	P_3	P_3	M_3

Sources: Our conception from tables 11 and 12

5. Discussion

The previous analysis on the characteristics of individuals, victims of the phenomenon, implies the assumption that one of the percentiles is set, and the other varies according to the different characteristics selected. In reality, bribes are paid simultaneously below the 75th and above the 25th percentile. This approach allows us to consider much

the payment zone between the two percentiles (modal class), where the majority of the amounts paid is located. This brings us to refine the profiles of individuals, victims of the phenomenon, by detecting at the level of the modal class, the dominant modality of the characteristic victim of the phenomenon, given its socio-professional status.

As far as gender is concerned, when bribes are simultaneously set below and above the afore mentioned percentiles, we notice that men pay more bribes below the 25th percentile, and women beyond this percentile[9]. It is therefore established that compared to men, women are more representative of the modal class. This contradicts the idea that women are less prone to corruption compared to men (Lavallee *et al.*, 2010) and confirms the theory that women are more affected by the phenomenon due to their more specialized and frequent health service needs (UNDP, 2011). Similarly, for the income characteristic, when bribes are simultaneously set below and above the 75th and the 25th percentiles, individuals with incomes of 250,000 and less are more likely to pay bribes under 1,000 CFA Francs and over 3,000 CFA Francs respectively, none of these amounts being part of the modal class; On the contrary, holders of an income of more than 250,000 tend to pay more bribes of more than 1,000 CFA Francs, and bribes under 3,000 CFA Francs. This last modality is therefore more representative of the modal class than the first. Holding the same reasoning for the age and school level characteristics, it became clear that the older and the more educated appear as representative modalities of the modal class. The table below presents for each representative category of the modal class, the corresponding socio-professional status.

Table-14. Number and patients' profiles who pay amounts of bribe corresponding to the *modal class* given their socio-professional category

Characteristics / Socio-professionnal Category	Sex			Income			Age			School level		
	Female	**Male**	**Total**	**250,000 and less**	**above 250,000**	**Total**	**40 years and less**	**Above 40 years**	**Total**	**Not Superior**	**Superior**	**Total**
Senior staffs	**4 (80%)**	1 (20%)	5 (100%)	2(40%)	**3(60%)**	5(100%)	2(40%)	**3(60%)**	5(100%)	0	**5(100%)**	5(100%)
Control Agents	1(12 .5%)	7 (87.5%)	8 (100%)	7(87.5%)	1(12.5%)	8(100%)	8(100%)	0	8(100%)	0	8(100%)	8(100%)
Enforcement officers	5 (33.3%)	10(67.7%)	15(100%)	15(100%)	0(0%)	15(100%)	14(93.3%)	1(6.7%)	15(100%)	9(60%)	6(40%)	15(100%)
Businessmen / contractors	2(16.7%)	10(83.3%)	12(100%)	6(50%)	6(50%)	12(100%)	7(58.3%)	5(41.7%)	12(100%)	7(58.3%)	5(41.7%)	12(100%)
Housewives	18(100%)		18(100%)	14(78.8%)	4(22.2%)	18(100%)	16(88.9%)	2(11.1%)	18(100%)	17(94.4%)	1(5.6%)	18(100%)
Sellers	17(68%)	8(32%)	25(100%)	24(96%)	1(4%)	25(100%)	19(76%)	6(24%)	25(100%)	22(88%)	3(12%)	25(100%)
Unemployed	7(41.2%)	10(58.8%)	17(100%)	16(94.1%)	1(5.9%)	17(100%)	16(94.1%)	1(5.9%)	17(100%)	10(58.8%)	7(41.2%)	17(100%)
Others	11(39.3%)	17(60.7%)	28(100%)	27(96.4%)	1(3.6%)	28(100%)	25(89.3%)	3(10.7%)	28(100%)	12(42.9%)	16(57.1%)	28(100%)

Source: Our estimates from the survey data

We see from this table that as far as gender is concerned, women constitute the most representative modality: most of them are senior staffs (80%), sellers (68%) and housewives (100%)[10] . For the income characteristic, those with more than 250,000 constitute the most representative modality which includes among others, senior staffs (60%) and businessmen or contractors (50%). The above 40 years are the representative modality of the modal class of the age characteristic, composed essentially of senior staffs (60%). As concerns the school level, the more educated are the representative group of the modal class who are mostly senior staffs (100%), control agents (100%) and other (57.1%) that can be assimilated to the graduates of the Higher Education working in the informal[11]. In general, we find that for all the categories representative of the modal class, senior staffs are included: they are usually graduates of Higher Education who earn higher amounts of more than 250,000 CFA Francs, are older than forty years, and are female. Here, the theory is confirmed with regard to income because according to the latter, patients with the highest incomes would be most victims of the phenomenon (Hunt and Lazlo, 2005). For gender, the theory is somewhat debated; in our case with regard to women, they are considered more vulnerable to corruption than men, this because of their socio-professional status (senior staffs and traders) which grants them a high income, confirming thus the theory that the rich would be the most exposed to the phenomenon. Moreover, they are generally more prone to diseases than men, thus requiring them to be much in contact with health professionals and therefore, more exposed to bribe payments. Our results refute the theory that the youngest are the most vulnerable to corruption because in reality, older people have much money and therefore, holders of highest incomes, thus reconfirming the theory that the wealthiest would be most exposed. Similarly, the more educated are the most vulnerable because they are also holders of highest incomes, insofar as in majority, they are essentially senior staffs and control agents.

To the question of who pays and how much, we can say that the most vulnerable to corruption are mostly the *wealthiest aged above forty, who are mostly senior staffs, whose education level is quite high, who are female, and whose amounts fall within the modal class*. This result is the same as the one found earlier when the amounts of bribe paid were set below the 75th percentile, this for amounts of bribe paid above 1,000 CFA Francs.

6. Conclusion

The purpose of this study was to highlight the characteristics of patients who pay amounts of bribe during consultation in the various public hospitals of the city of Douala. Initially, these characteristics were studied respectively by setting the amounts of bribe paid below and above the 75th and 25th percentiles, while varying one or the other percentile, based on the modalities of each characteristic. Secondly, we considered those of individuals whose bribe amounts are between the afore mentioned percentiles, to characterize patients victims of the phenomenon, given their socio-professional status. In the last case, it appears that the wealthiest, the women, the older and the more educated are more likely to corrupt practices than other socio-demographic and socio-professional categories, this last result corroborating with the one found earlier, when the amounts of bribe paid were set below the 75th percentile, this for amounts of bribe paid above 1,000 CFA Francs. We note, however, for all the

[9]The amounts paid by women can go beyond 3,000 given that according to this hypothesis, the amounts paid must be simultaneously below 3,000 and above 1,000 thus within the modal class.

[10]The housewife status in the studied environment is unique to woman. We can do without it as socio-professional category. From this point of view, this percentage should not be taken into account when interpreting the results.

[11]Motorcycle drivers (Bendsikineur), taxi drivers , street vendors

results, that the level of the amount of the bribe causes a variation of individuals' characteristics, given the purchasing power of everyone linked to his/her socio-professional category. This contradicts for instance to some extent some theoretical results that do not include the setting of the level of bribe. In fact, the idea that corrupt practices would be reserved for certain social classes is discussed because inside the modal class for example, we have the profile-type of the corrupt and once out, this profile changes: in fact, individuals who pay amounts of bribe below the 25th percentile, are also different from those who pay beyond the 75th percentile. So, everyone is involved in the process, each having his/her own level. No one is spared.

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Appendix-1. Table n°15 : Socio-professional category and level of household income

		Level of household Income				Total
		Less than 75,000	Between 75,000 and 150,000	Between 151,000 and 250,000	Above 250,000	
socio professionnal Category	Senior staff	0	2	3	19	24
	Control Agent	0	8	16	11	35
	Enforcement officer	13	17	5	2	37
	Contractors (Business men)	2	4	9	14	29
	Housewives	24	14	7	10	55
	Seller	25	29	7	6	67
	Unemployed	51	7	0	1	59
	Others (informal)	69	19	7	6	101
Total		184	100	54	69	407