International Journal of Science and Research (IJSR)
ISSN: 2319-7064
ResearchGate Impact Factor (2018): 0.28 | SJIF (2019): 7.583

Development of a Conceptual System Based on the Explanation of Social Inequalities in Health Related to Household Health Expenditure in a Context of Vulnerability to Multidimensional Poverty in Benin

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Abstract: ***Reducing social inequalities in health (SSI) is an essential issue for promoting the well-being of populations in developing countries like Benin. Achieving this objective must result from the establishment of effective economic and health policies that better meet the real needs of the populations. These different policies can only be effective with an understanding, in-depth knowledge and mastery of the determinants of SIH. Thus, to meet this challenge, the present study has set itself the objective of proposing an explanatory model of SIH based on health spending in a context of multidimensional household poverty. It was carried out in three months in three communes of Benin, which are Cotonou (richer commune), Savè (middle commune) and Karimama (poorer commune) on a sample of 1261 households constituted by the formula of Sloven. Additional descriptive and explanatory analyzes resulting from the censored Tobit and simple Logit econometric regression models made it possible to estimate household health expenditure, assess their weight and weight effect, but also analyze the links between household expenditure health and social inequalities in health. The Social Dominance Theory of Sidanius and Pratto (1993) and the Feedback Theory of Evans et al. (1999) facilitated the development of a new explanatory theory of SIH. The results of this study show that for all the populations studied, a small part of the monthly budget is allocated to health. Households do not even devote 5% of their total expenditure to it (budget coefficient = 4.28%), which is equivalent on average to around 1008 FCFA. Likewise, in the presence of other factors, according to the full model, if health expenditure increases by 1%, the chance of being in good health increases by 0.4%. These same results indicate that even if in monetary terms the rich spend more than the poor, in terms of weight on income, the poor bear the expenses more than the rich. Consequently, it was noted that the variable "health expenditure" is one of the explanatory factors of SIH and contributes 10.18% to it in the target municipalities. From this link, it resulted in the development of a theoretical model called Theory of Akpovo Kocou Edgard Romaric (T-KERA, 2020) to facilitate a deep understanding of SIH in order to define policies and strategies favorable to the improvement of the property. -be health of the populations. The T-KERA (2020) is offered as a decision-making tool that participate in an operational way in the technical device for reducing social inequalities in health in a context of vulnerability to multidimensional poverty of households in Benin. It serves as a basic instrument for the definition of indicators to better meet the equity needs in the health of the populations of the towns and countryside of Benin.***

Keywords: health expenditure, households, inequalities.

1. Introduction

The International Conference on Primary Health Care reaffirms that health is a fundamental human right, and that attainment of the highest possible standard of health is an extremely important social objective which concerns the whole world and presupposes the involvement of many socioeconomic sectors other than health (WHO, 1978). From this declaration, individuals should have the same opportunity to have health well-being regardless of the biological conditions of each of them. In this perspective, much progress is being made. However, global statistics denounce that the progress observed is uneven, both between and within countries. Thus, there is a 31-year difference between the country with the longest life expectancy and the one with the shortest (UNDP, 2019). These gaps, also called social inequalities in health, according to the World Health Organization, designate: "unjust and significant gaps that are recorded within the same country or between the various countries of the world" and represent a stake for the population health and public health. In fact, everywhere in the world, social inequalities in health increase with the existential conditions of individuals. Unequal social relations weaken individuals in their potential for self-realization, and their state of health. In Benin, despite satisfactory health infrastructure coverage,

estimated at 88.3%, regional disparities persist, and populations have to travel an average of seven kilometers to access a health center (SCP, 2019). The issue of reducing social inequalities in health therefore remains at the heart of the major challenges for the socio-health well-being of our populations. In order to meet these challenges, it was normal to understand the factors explaining the phenomenon. This understanding of the explanatory factors is not easy given the complexity of the phenomenon and its dynamic nature. Moreover, the literature reports that there are real difficulties in analyzing the determinants of social inequalities in health. Alongside age, sex and hereditary factors, individual behaviors (consumption of tobacco and alcohol, diet, physical exercise, etc.), the communities in which individuals live, living conditions and (employment, housing, transport, access to essential public services), and finally economic, cultural and environmental conditions are the main categories of determinants most often identified. The way in which these determinants are constructed and are linked together refers to theoretical models but above all, ultimately, to political choices in terms of social justice. Thus, in a Beninese context where more than 65% of the population lives below the multidimensional poverty line, what is the theoretical model that can better understand the anthropological, social, cultural and economic dimensions of social inequalities in health in order to contribute to their reduction? This article attempts to answer this question through a situational diagnosis, an examination of the links between health and existential conditions, an evaluation of the effect / weight of health expenditure on the health of households and the analysis of the deterioration of health poor.

To do this, this study aims to develop a theoretical explanatory model of social inequalities in health (SSI) in connection with health expenditure in a context of vulnerability to multidimensional poverty of households. Specifically, it was about:

- Determine the share of health in total household consumption expenditure;
- Assess health expenditure and its weight effect on household health;
- Analyze the deterioration in the health of the poor under the weight effect of household health expenditure;
- Propose an explanatory diagram of these different links.

2. Methodology

2.1 Type of study and data used

This descriptive and explanatory cross-sectional study was carried out in the communes of Cotonou, Savè and Karimama in the Republic of Benin. The data used comes from a sample survey carried out from December 2019 to February 2020.

2.2 Choice of study areas

The three municipalities namely: Cotonou, Savè and Karimama were selected on the basis of a reasoned choice taking into account the objectives of the study and the characteristics of each of these municipalities in relation to the standard of living. In Benin, Cotonou is considered as a municipality with the highest standard of living, Savè has an average standard of living while that of Karimama is considered the lowest according to the RGPH 4.

2.3 Study population and sampling method

The study population is made up of all the households of the three municipalities represented by their respective heads. The survey was carried out among a representative sample of households in the three municipalities. The minimum sample size (n) in each municipality was calculated from Sloven's formula (Cochran, 1963; Yamane, 1967). This formula is n = N / (1 + N * e ^ 2) where n is the sample size, N is the population size (here it is the total number of households in each municipality), and the margin of error used is e = 5% (conventionally used in economic and social sciences). According to the General Population and Housing Census, fourth generation (RGPH-4) of 2013, the cities of Cotonou, Savè and Karimama have 166,433, 16,096 and 9,168 households respectively (INSAE, 2016). The minimum sample size determined in each municipality is 399.04 for Cotonou, 390.30 for Savè and 383.27 for Karimama. Taking into account demographic changes, the sample size was increased by 10%. Thus the final size (n) of the population was 1292 households, of which 440, 430 and 422 respectively for Cotonou, Savè and Karimama. The sample was obtained using the two-stage cluster-area sampling technique. The primary sampling units (UPS) are the enumeration areas (EAs) defined during census mapping work carried out within the framework of the RGPH-4 of 2013. The secondary units (US) are made up of the households living in the EAs drawn. After enumeration, the households were drawn by systematic selection. In total, 1261 households were actually surveyed using a questionnaire and an observation grid.

2.4 Inclusion and non-inclusion criteria

To be part of the sample, households had to reside in one of the target communes for at least two years, have a head of Beninese nationality and give their informed consent to participate in the study. Not all households were selected whose heads or any other member who could provide reliable information on the household were absent or did not provide all the information necessary for data processing.

2.5 Data collection tools

In order to guarantee the validity and reliability of the data, a questionnaire was drawn up based on the questionnaires used during modular surveys periodically carried out by INSAE (INSAE and ICF, 2019). A total of 58 questions were proposed in this questionnaire. These questions were used to create a data entry application with CsPro software (version 7.3.1), which enabled digital data collection using smartphones (CAPI). Direct observation was carried out by the investigators using an observation grid designed from the DHS and MICS survey questionnaires usually used by INSAE to observe the socioeconomic and demographic characteristics of the households surveyed. .

2.5.1Data collection protocol

A first enumeration step made it possible to enumerate all the households in each EA. During this operation, contacting the households surveyed enabled them to explain the objectives of the research to them and to guarantee the confidentiality and anonymity of the data to be collected. An appointment was subsequently made with the heads of the selected households to answer the questionnaire. On the day of the appointment, the team of interviewers administered the questionnaire to the head of household and the information was recorded as it was collected in the CsPro software. These data are transmitted later to the statistician for the constitution of the sampling frame.

2.5.2 Data analysis and use

The descriptive analysis was mainly based on the calculation of monthly consumption expenditure per household and the calculation of budget coefficients. Particular emphasis was placed on household health expenditure and estimates were made in monetary terms as well as in terms of proportion. The weight of health expenditure was estimated in total monthly expenditure by households and then in non-food expenditure. The variable "Health expenditure" was crossed with the other variables of the study. The means, proportion and variance tests are also carried out to compare the distribution of health expenditure in the different layers of the population and between the municipalities. Among the tests carried out, we have among others, the chi-square test, Student's t, Mann Whitney and that of Krus all Wallis. All these tests are carried out at the accepted threshold of 5%. The descriptive analysis also consisted of providing proportions and ratios on the overall health status of the households surveyed. It was determined here the incidence of hypertension, growth retardation which allowed to characterize the diagnosed health supported by the estimate of the perceived health. The outputs are presented in the form of tables and graphs. The explanatory analysis refers to econometric modeling. A left-censored Tobit regression econometric model is estimated using the maximum likelihood method. It made it possible to quantify the association between the dependent variable and each of the influencing factors, while taking into account the simultaneous effect of the other factors. A logit model was also estimated and made it possible to quantify the link between social inequalities in health and the socioeconomic and demographic factors of the study.

2.6 Summary of variables in studies

The different results were analyzed according to the listing of the main variables below:

- Total household consumption expenditure;
- Household health expenditure;
- Household standard of living;
- Perceived state of health;
- Social inequalities in health

3. Results

Before presenting the results of this research, it seems necessary to recall that the present work was based on social hierarchy by a multidimensional analysis of household poverty in the study municipalities carried out by Edgard Romaric AKPOVO, Émile-Jules ABALOT and Edgard-Marius OUENDO (2020) in their article entitled “social hierarchization through a multidimensional analysis of household poverty in the towns of cotonou, save and karimama (Republic of Benin)”. Their work made it possible to identify a pyramidal structure of households in the target municipalities with a positive social value at the top (very rich class) and at the bottom of households with negative social value (very poor class). The other two classes (rich and poor) constitute the category of intermediate households and therefore vulnerable to poverty. Thus, the results of this research are as follows:

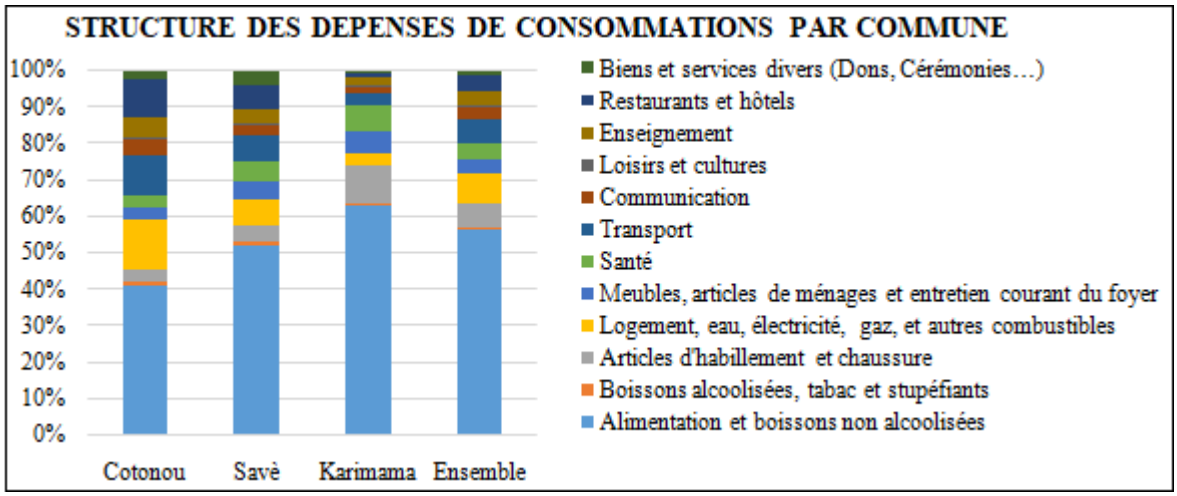

Figure 1: Household expenditure by study municipality according to the different consumption items, Benin
Source: Field survey results January 2020, Akpovo, Abalot, Ouendo, 2020

In the three municipalities and according to the 12 consumption functions in economics, the results show that the highest budget coefficient is for food. Health spending represents 4.28% of total spending for all households. The budget coefficient for health is higher in Karimama (7.14%) than in other localities (3.17% in Cotonou and 5.21% in Savè). These same results show a glaring difference in the expenditure structure of poor households from that of non-

poor households. It is noted that poor households devote more than 70% of their budgets to food while non-poor households (vulnerable and rich) devote less than half of their budgets to food. In addition, poor households spend 5.14% of their income on health, while the rich spend 4.48%.

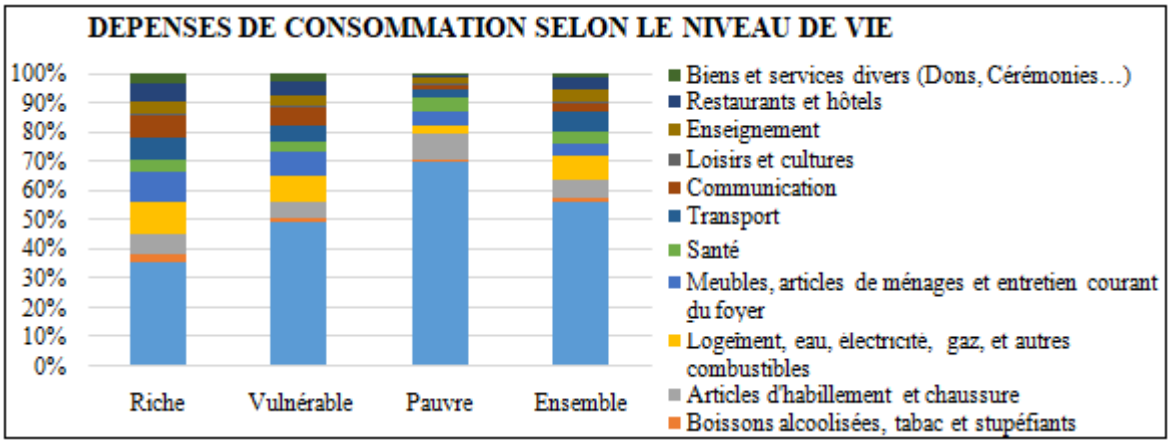

Figure 2: Consumption expenditure according to standard of living by study municipalities, Benin
Source: Field survey results January 2020, Akpovo, Abalot, Ouendo, 2020

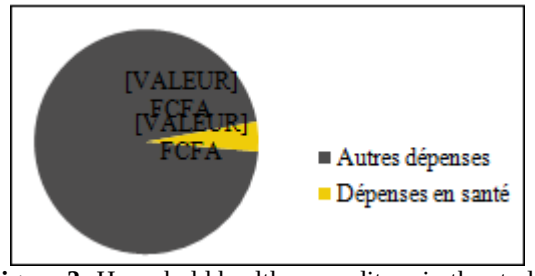

Figure 3: Household health expenditure in the study municipalities, Benin
Source: Field survey results January 2020, Akpovo, Abalot, Ouendo, 2020

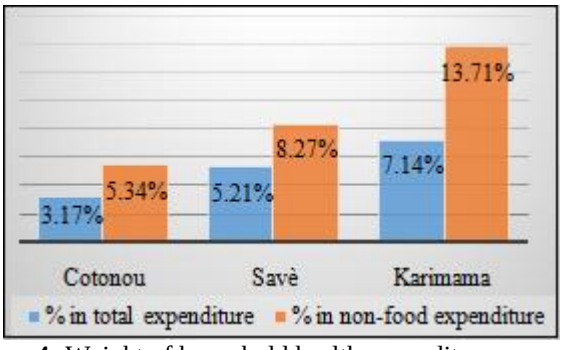

Figure 4: Weight of household health expenditure per capita by target commune, Benin
Source: Field survey results January 2020, Akpovo, Abalot, Ouendo, 2020

It is observed that the budget coefficient per capita for health is higher in the commune of Karimama (7.14%) and follows a downward trend as one moves towards the southern part of the country (5,21% in Savè and 3.17% in Cotonou). The proportion of health expenditure in non-food expenditure follows the same pattern as the budgetary coefficients in the three municipalities. In fact, the average monthly health expenditure per capita amounts to 357 FCFA in Karimama, 681 FCFA in Savè and then 1,421 FCFA in Cotonou.

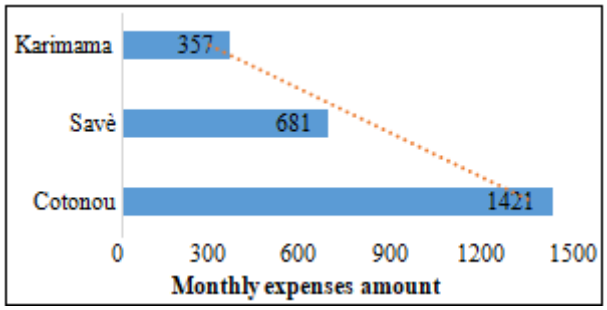

Figure 5: Amount of household health expenditure per capita by target communes, Benin
Source: Field survey results January 2020, Akpovo, Abalot, Ouendo, 2020

On average, per capita health expenditure per month represents 5.14% of the total expenditure of poor households and 14.24% of their non-food expenditure. At the same time, in wealthy households, an individual spends an average of 2.61% of total spending on health in a month. This represents 4.48% of non-food expenditure. In households vulnerable to multidimensional poverty, health expenditure accounts for 3.41% of total expenditure and 5.84% of non-food expenditure. In monetary terms, a person belonging to a poor household spends an average of 473 FCFA per month on their health, whereas this amount rises to 2136 for a person from a rich household (that is to say about 4 times higher). It can be remembered that health expenditure is low among the poor, but occupies a large part. On the other hand, they are high among the rich, but occupy a small part of their budgets.

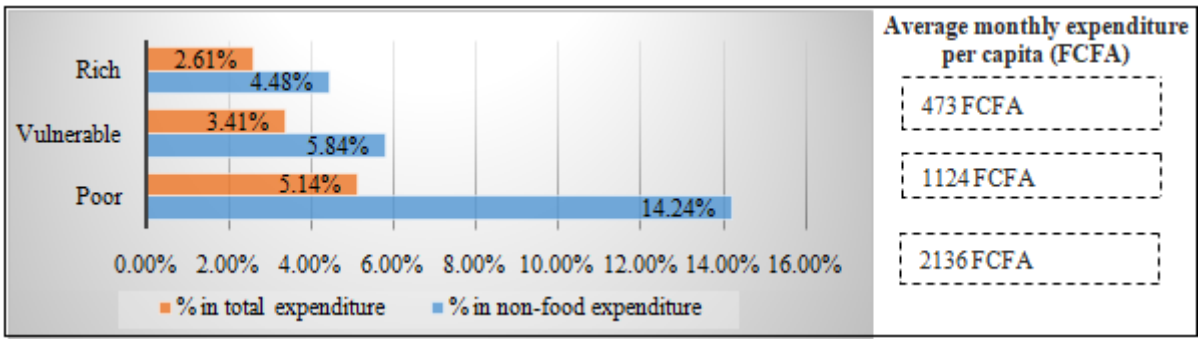

Figure 6: Weight of health expenditure and standard of living in target municipalities, Benin
Source: Field survey results January 2020, Akpovo, Abalot, Ouendo, 2020

The econometric analysis of the Tobit regression reveals that place of residence does not explain health expenditure. On the other hand, the municipality of residence is a determining factor of the proportion of monthly health expenditure per capita. If an individual lives in Karimama (respectively in Savè) the share of his health expenditure will increase by 11% (respectively 63%) more than that of an individual living in Cotonou. The results of the model show that living in decent housing reduces health costs. Indeed, households living in acceptable (respectively decent) housing spend 13% (respectively 37%) less on health care than those living in poor housing conditions. Coverage by health insurance significantly decreases per capita monthly health expenditure. Explicitly, households without medical insurance spend 63% more on monthly health expenditure per capita than those without. When an individual lives in a wealthy household, the proportion they spend on health care per month decreases by 65% than an individual in a poor household.

Table I: Result of the TOBIT regression

Explained variable: Monthly health expenditure / head			
Variables		Coefficient	P>|t|
Place of residence	Rural	Reference modality	
	Urban	0,034	2,17
Municipality	Cotonou	Reference modality	
	Savè	0,11	0,00
	Karimama	0,63	0,00
Gender of household head	Male	Reference modality	
	Female	0,067	0,00
Marital status of head of household	Single	Reference modality	
	Maried	0,46	0,03
	Divorced/ Widower	0,18	0,01
Access to drinking water	Yes	Reference modality	
	No	0,02	0,00
Housing condition	Bad		
	Acceptable	-0,13	0,96
	Decent	-0,37	0,04
Performing preventive care	No	Reference modality	
	Yes, self-medication (drugs or leaves)	-0,53	0,02
	Yes, hospital consultation	-0,61	0,00
Median age of household members	Under 30	Reference modality	
	Between 30 and 40 years old	-0,41	0,01
	Between 40 and 50 years old	-0,08	0,68
	Over 50 years	0,12	0,00
Medical insurance	Yes	Reference modality	
coverage	No	0,63	0,00
Education level of head of household	None	Reference modality	
	Primary	0,26	1,53
	Secondary	0,43	0,58
	University	0,06	0,03
Household standard of living	Poor	Reference modality	
	Vulnérable	-0,17	0,02
	Rich	-0,65	0,00

Source: Field survey results January 2020, Akpovo, Abalot, Ouendo, 2020

Important note: In what follows, it is a question of determining the causes likely to create social inequalities in health in the target municipalities. This part concerns 3,168 individuals. Pregnant women during the survey were excluded from the sample. Note that individuals whose age has not been provided and those whose anthropometric measurements are outside a plausible range are excluded from the data. Likewise, some individuals are excluded when their weight or height has not been measured.

It should be noted that anthropometric measurements were taken to measure the state of health of the respondents. Analysis of the results shows that more than half (53.63%) of underweight individuals live in Karimama commune, while Cotonou commune is home to only 15.19% of them. Likewise, wasting is more rampant in Karimama commune. When it comes to sex, men are slightly more prone to wasting than women. The results also show that growth retardation (height too small for age) affects 35.84% of individuals. Of these, 25.21% suffer from chronic undernutrition and 10.63% suffer from the severe form of stunting. It should be remembered that the municipality of Karimama is the most affected whatever the form (72.18% for the moderate form and 86.12% for the severe form). In Cotonou, on the other hand, these proportions decrease (10.60% for the moderate form and 4.12% for the severe form). About one in four people have high blood pressure and just under 6% have low blood pressure. Also 68.04% of individuals have normal blood pressure.

The analysis of the relationship between health status and health expenditure has been done from different angles. First, if health expenditure is considered as a quantitative variable, it is noted that the average monthly health expenditure per capita is 1305 FCFA for individuals in poor health. In the category of healthy individuals, the average monthly expenditure on health amounts to 817 FCFA. An average difference of 488 CFA francs is noted and the student's test reveals that this difference is significant at the

5% level. Then it was grouped health expenditure in classes as shown in the table. It is noted here that the chi-square test is significant at the 5% level. Focusing the analysis on the proportion of health expenditure in household expenditure, it is noted that for those in poor health, health expenditure represents one tenth of total household expenditure and one third of non-food expenditure. In households where individuals are in good health, these proportions are reduced by half. Finally, the proportion of health expenditure in overall household income according to health status reveals that individuals in poor health spend an average of 41.27% of their overall income on health care.

Econometric analyzes (logit model) made it possible to quantify the link between social inequalities in health and the socioeconomic and demographic factors of the study.

Table II: Results of econometric estimates of the logit model

		Modèle brut				Modèle plein			
Variables	**Modalités**	***Coefficient***	***Odds ratio***	***Effets margianux***	***P-value***	***Coefficient***	***Odds ratio***	***Effets margianux***	***P-value***
SEXE	Féminin	Modalité de référence							
	Masculin	0,859	2,361	0,038	0,162	0,034	1,035	0,0124	0,218
AGE		1,364	3,912	0,593	0,000 ***	0,092	1,096	0,00807	0,000 ***
AGE ^{2}		-0,001	0,999	-0,173	0,033 **	-0,831	0,436	-0,024	0,000 ***
COMMUNE DE RESIDENCE	Karimama	Modalité de référence							
	Cotonou	1,921	6,827	0,150	0,000 ***	0,517	1,677	0,073	0,037 **
	Savè	1,121	3,067	0,124	0,003 **	0,003	1,003	0,014	0,018 **
MILIEU DE RESIDENCE	Rural	Modalité de référence							
	Urbain	0,625	1,867	0,213	0,049 **				
TAILLE DU MENAGE		-1,972	0,139	-0,062	0,014 **	-4,347	0,013	-0,093	0,006 **
SEXE DU CHEF DE MENAGE	Féminin	Modalité de référence							
	Masculin	1,222	3,393	0,107	0,044 **	-2,342	0,096	0,264	0,431
STATUT MATRIMONIAL DU CHEF DE MENAGE	Célibataire	Modalité de référence							
	Marié	-1,068	0,344	-0,087	0,028 **				
	Divorcé / Veuf	-3,515	0,030	-0,053	0,034 **				
NIVEAU D'INSTRUCTION DU CHEF MENAGE	Aucun	Modalité de référence							
	Primaire	-3,380	0,034	-0,219	0,000 ***	0,050	1,051	0,000	0,063 *
	Secondaire	1,035	2,814	0,041	0,000 ***	0,759	2,135	0,002	0,028 **
	Universitaire	1,495	4,458	0,538	0,000 ***	1,529	4,612	0,008	0,003 **
PROFESSION DU CHEF MENAGE	Autres	Modalité de référence							
	Professions intellectuelles / Cadres	2,566	13,014	0,426	0,000 ***				
	Professions intermédiaires	1,143	3,135	0,027	0,000 ***				
	Commerçants	0,614	1,847	0,063	0,000 ***				
	Employés / Ouvriers	-1,378	0,252	-0,639	0,000 ***				
	Artisans	-0,308	0,735	-0,007	0,000 ***				
ACCES DU MENAGE A L'EAU POTABLE	Non	Modalité de référence							
	Oui	2,241	9,406	0,391	0,000 ***	1,342	3,827	0,381	0,000 ***
ACCES DU MENAGE A L'ELECTRICITE	Non	Modalité de référence							
	Oui	0,138	1,148	0,032	0,537	0,536	1,710	0,173	0,931
ASSAINISEMMENT DU CADRE DE VIE	Sale	Modalité de référence							
	Propre	1,036	2,818	0,167	0,000 ***				
CONDITION DE LOGEMENT	Mauvaise	Modalité de référence							
	Acceptable	0,734	2,084	0,042	0,000 ***	0,051	1,053	0,037	0,029 **
	Décente	1,813	6,131	0,348	0,017 **	4,313	74,694	0,135	0,036 **
NIVEAU DE VIE DU MENAGE	Pauvre	Modalité de référence							
	Vulnérable	0,735	2,086		0,001 **	0,091	1,096	0,077	0,012 **
	Riche	2,284	9,817		0,000 ***	1,628	5,093	0,359	0,001 **
REALISATION DES SOINS PREVENTIFS	Non	Modalité de référence							
	Oui	3,003	20,154	0,073	0,305	0,002	1,002	0,005	0,183
COUVERTURE PAR UNE ASSURANCE MEDICALE	Non	Modalité de référence							
	Oui	2,315	10,129	0,761	0,000 ***	3,944	51,607	0,627	0,000 ***
DEPENSES MENSUELLES EN SANTE PAR TÊTE (FCFA)		0,341	1,406	0,0000612	0,018 **				
% DES DEPENSES EN SANTE DANS LES DEPENSES TOTALES		1,348	3,849	0,143	0,019 **	1,163	3,201	0,004	0,002 **
% DES DEPENSES EN SANTE DANS LE REVENU GLOBAL DU MENAGE		2,4751	11,883	0,421	0,163				
Signification des codes		*** p < 1%		**p < 5%		*p < 10%		` ´non significatif	

Source: Field survey results January 2020, Akpovo, Abalot, Ouendo, 2020

It is found that compared to the poor, the rich are 2.67 times more likely to be good. People vulnerable to poverty are 9.81 times more likely to be in good health. In light of the literature, we would also like to test whether an individual's state of health has an effect on his standard of living. The estimated econometric model reveals that this effect is statistically significant if we assume a threshold of 5%. By regressing with the level of deprivation, we note that when the level of deprivation increases by 10%, the risk of being in poor health increases by 8% (marginal effects). Health spending has a statistically significant and positive effect on health status. The analysis of the marginal effects reveals that when the monthly expenditure on health increases by 100 FCFA compared to the average, the probability of being in good health increases by 6.12%. In other words, if the proportion of health expenditure in total household expenditure increases by 1% from the average, the odds of being in good health also increase by 14.31%.

From the results of the full model, it emerges that the household standard of living (measured by multidimensional poverty) in which an individual lives has a statistically

significant effect on his state of health. Compared to the poor, people living in rich households who are vulnerable to multidimensional poverty are 5.09 and 1.09 times more likely to be in better health, respectively. The coefficient for the "Yes" modality of the Medical Insurance variable is positive. It can therefore be said that compared to individuals who do not have medical insurance, those who do have are more likely to be in good health. In detail, the chance of being in good health increases by 62.7% when you are covered by medical insurance. The variable "health expenditure" used in the full model is a quantitative variable which corresponds to the percentage of health expenditure in total household expenditure. The coefficient obtained is positive, which corroborates the results of the gross effect. But it is noted that in the presence of other factors, the "cause effect" of health spending on social inequalities in health is reduced. Based on the marginal effects, it is assumed that the 1% increase in health expenditure induces a 0.4% increase in the chance of being in good health.

Table III: Weight of factors explaining SIH in target municipalities, Benin

Rank	Variables	Absolute contributions	C (%)
1	Housing condition	0,156	27,42
2	Medical insurance	0,076	13,32
3	Quality of life	0,066	11,63
4	Health expenditure	0,058	10,18
5	Access to drinking water	0,057	10,02
6	Residential commune	0,05	8,76
7	Age	0,049	8,58
8	Chief's level of education	0,047	8,36
Total		0,5712	100

Source: Field survey results January 2020, Akpovo, Abalot, Ouendo, 2020

4. Discussion

For a good structuring of the present discussions, it was important to recall that the objectives of this study were to determine the share of health in the total household consumption expenditure in the municipalities of (Cotonou, Savè, Karimama), to assess health expenditure and its weight effect on household health, to analyze the deterioration in the health of the poor under the weight effect of household health expenditure and to propose an explanatory diagram of these different links. Two analytical approaches were used for data processing. A description essentially based on the calculation of monthly consumption expenditure per household and the calculation of budget coefficients. Particular emphasis was placed on health expenditure in households and estimates were made in monetary terms as well as in terms of proportion. The weight of health expenditure was estimated in the total monthly expenditure per household then in non-food expenditure and simple cross-sorting was carried out with the characteristics of the households. The second approach calls for an explanatory analysis which refers to econometric modeling. A left-censored TOBIT econometric model is estimated by the maximum likelihood method. It made it possible to quantify the association between the dependent variable and each of the influencing factors, while taking into account the simultaneous effect of the other factors. In the second part of this research, it was to analyze the determinants of social inequalities in health through the identification of the factors likely to create them and the distinction of the part occupied by health expenditure in their hierarchy. The simple logit regression model made it possible to explore the data from the sample survey, the sampling of which had the particularity, unlike the first part, of being made up of household members taken in isolation. Thus, in the 3rd degree, 3168 individuals are drawn and have been the subject of anthropometric measurements. Proportions, ratios and indicators on the overall health status of the households surveyed were determined. The distribution of the health of the populations between different social strata, between municipalities and by socio-demographic characteristics has been made.

From the various results obtained, it emerges that a small part of the monthly budget is allocated to health. In fact, households do not even devote 5% of their total expenditure to it (budget coefficient = 4.28%), which is equivalent on average to around 1008 FCFA. At the municipal level, the per capita budget coefficient for health is higher in the municipality of Karimama (7.14%) and follows a downward trend as we move towards the southern part of the country (5 , 21% in Savè and 3.17% in Cotonou). The proportion of health expenditure in non-food expenditure follows the same pattern as the budgetary coefficients in the three municipalities. The rich households which have satisfactory incomes, spend in terms of value, four times more on their health than the poor households. This is explained by the fact that the rich at first, are for the most part of an average or high level of education, therefore understand the necessity of health in the productivity of the individual and consequently adopt a behavior favorable to care than the poor. They have a positive perception of care for the well-being of the individual. They develop a responsibility for the disease associating both the desire to get better and the willingness to pay for care. They therefore frequent large public and private hospitals most of the time. These hospitals charge more for treatment fees because they have a modern technical platform with a system of specialist doctors. However, the costs of hospitalization and treatment in the public sector are shared with the users.

For the private healthcare sector, healthcare services and pricing are based on a market logic. This state of affairs has direct repercussions on the amount of health expenditure. Secondly, the wealthy generally invest more in preventive care and go to pharmacies more at the slightest observation of poor health or poor health. At the level of the various health expenditure items, the expenditure on preventive care being added to the expenditure on care at the onset of the disease, the total health expenditure will therefore be high. To this, it should be noted that the rich go more in consultations for specialized care than general care. While specialized care is generally more expensive than general care. Thus, preventive care, general curative care and specialized care constitute, in most cases of illness, the structure of the direct costs of care in wealthy households. However, taking into account all the dimensions related to care, should oblige us to analyze indirect costs related to intangible costs such as the time spent in the enclosure of the care center and the costs related to the slowdown in productivity during the period. of illness. However,

information on these variables could not be collected during the survey. Most of the heads of households surveyed did not have the necessary elements of assessment to estimate these variables. The calculation of household health expenditure was just strictly limited to the expenditure described in the structure of the health expenditure selected. If the charges described were to be incorporated into these estimates, they would increase them further. Right now, wealthy households are reportedly spending even more on their health. In the same vein, this analysis should not obscure the possibilities of medical evacuation, which are also additional costs likely to increase health expenditure among the richest. This measure may also take into account health rest away from home as a health burden in the structure of health expenditure among the rich. The executive who has been prescribed a health rest and who leaves the city of Cotonou to go to enjoy it in a hotel complex for example, pays money for their stay. From an accounting point of view, this expenditure on rest care constitutes health expenditure. In any case, the health expenditure of wealthy households essentially affects the quality of care and, by extension, their health well-being.

Moreover, unlike rich households, the poor with very limited income and generally insufficient in terms of needs to be met, prefer to focus on food. They very rarely attend hospitals and this in extreme cases. They invest more in self-medication and this in the traditional way (herbal tea, root decoction etc.). From the understanding they have of their health, they find it difficult to frequent pharmacies or pharmaceutical depots either because these structures are non-existent or rare in certain localities, or because the populations refer to traditional therapy and / or religious care and worshipers. In the event that they go to hospitals, and this in extreme or serious cases, they prefer public health centers or care micro-cabinets where care is not necessarily of acceptable quality compared to large centers and is not are generally only admitted to general care. This can justify the low amount of their health expenditure. This low rate can also be explained by socio-cultural reasons such as ethnicity, religion and the perception that populations have of their health. The sex of the nursing staff can in certain localities be a variable of the attendance by the populations of the health centers and therefore a factor which justifies the low rate of health expenditure. A health center where the gynecologist is a man cannot expect to receive as many women as a health center where the gynecologist is a woman.

The example of a health center or a maternity hospital built in the vicinity of a cemetery perfectly illustrates these sociological constraints. Patients fear death there. By doing so, they are therefore no longer prepared to spend resources for treatment. All these elements present a false downward trend in health spending by these households. However, if the poor go to care only in the event of complications, they unconsciously increase health-related burdens because at the moment, care is more expensive and their income is not necessarily sufficient to support these expenses. Health conditions are further deteriorated because they cannot afford the care or if they manage to do so, they get further bogged down in a spiral of debt which ends up weakening their standard of living. Sometimes, households are forced to sell their property to cover their health costs. In fact, resources, which were already very scarce, are further diminishing and weakening the standard of living of patients and consequently their health. This situation further widens the gap between the health status of the poor and that of the rich. Another important aspect remains the unavailability of the appropriate technical platform for treatment in certain localities such as Karimama. Take the example of a wealthy patient from this town who suffers from a trauma and is prescribed a CT scan. He will have to travel more than 600 km to benefit from this service in Cotonou or at least 200 km if he has to travel to Parakou. Travel costs are in addition to living and accommodation costs and this set is added to the direct costs of the service to significantly increase health care costs at the patient level. Thus, the rich in Karimama and the one in Cotonou do not have the same chance of benefiting from the same service which is likely to reduce the financial possibilities of the one in Karimama and not impact those of the patient in Cotonou. If, by the way, the patient from Karimama refuses treatment because of the burden that they represent, his state of health will deteriorate and cannot be the same as that of the patient from Cotonou. This difference in health status can therefore be attributable to the costs of care and therefore to health expenditure. If already between the rich, the gaps remain also pronounced depending on the municipalities, the situation between the poor and the rich is therefore more tangible within the municipalities and between municipalities. Obviously, although in terms of value, the rich spend on health than the poor, in terms of impact / weight (proportion in income) the poor bear more health expenditure than the rich. And this grows as we move from south to north. This situation is easily understood as the standard of living decreases as one moves from Cotonou to Karimama. The curve of disparities in health thus follows the course of that of the standard of living. Thus, it is obvious that health spending weighs heavily on the poor and to some extent keeps them in poverty or reinforces their poverty. As they still remain in poverty, they cannot get adequate treatment. This would undoubtedly create a health gap between them and the rich. These results corroborate the results found by HOUENINVO (2014) in his article entitled “Health expenditure and household impoverishment in Benin”. The results of his study revealed that health spending increased the incidence and intensity of poverty in Benin with a greater effect in rural areas. He noted that with health spending taken into account, the poor get poorer and some of the initially non-poor people get poorer. Its results are similar to those of Van Doorslaer et al. (2006); Garg and Karan, (2009); Shahrawat and Rao, (2011); Berman et al. (2012); Landusingh and Pandey, (2013).

All of its authors have shown that the effect of impoverishment is more severe for rural and poor households. This differentiated effect partly reflects the different constraints and opportunities faced by the poor and non-poor on the one hand, and rural and urban households on the other. The effects of the impoverishment of household spending on health care reflect, in a way, the limits of excessive recourse to private financing as the dominant mode of health financing. Households who do not have enough resources to pay for medical care in the event of illness are at risk of deteriorating health because the cost

of health services is directly on them (Houéninvo, 2014). Thus, health spending has driven many households into poverty and increased the poverty of those who are already poor (Whitehead et al., 2001).

In fact, the T-KERA model set out to highlight this aspect of household impoverishment as a result of health spending. This maintains the health gap (social inequalities in health) between rich and poor households. The results of the logit model confirm the hypothesis that health expenditure is one of the root causes of social inequalities in health.

5. Presentation of the T. KERA model

5.1 Old explanatory approaches "Two (2) Theories: TDS + Feedback"

The analysis model is built from the social dominance theory of Sidanius & Pratto (1999) and that of feedback that links well-being and health of Evans et al (1996). This composite model, which takes into account both the elements of social stratification, the determinants of health, the living environment of individuals will provide an in-depth knowledge of the situation of social inequality in health in relation to population health expenditure. Thus, the first theory, which is the Theory of Social Dominance (TDS; "Social Dominance Theory, SDT"), was proposed by Sidanius and Pratto (1999). According to the theory of social dominance, social inequalities can be explained by a kind of imperialism in societies or territories. A hierarchy is therefore created according to the strengths available to each society, which suggests that the weaker societies remain under the control of the strongest with the direct consequence of the inability to enjoy the same social advantages or privileges.

This state of affairs proves that taken individually, the members of these societies (strong and weak) cannot or cannot have the same socioeconomic status because they are limited in many respects in terms of living conditions.

This social hierarchy is based on three systems:

- The age system (disproportionate power of parents compared to children and adolescents);
- The gender system (disproportionate power of men compared to that of women);
- The system of "arbitrary group", different from one society to another, which relates to socially constructed groups based on characteristics such as ethnicity, nationality, social class, religion). The latter system is associated with a much higher degree of violence and oppression than the age and gender systems.

The theory of social dominance is based on three main assumptions:

1) While hierarchies based on the age system and the gender system tend to exist in all societies, hierarchies based on the system of arbitrary groups tend to emerge only in societies that produce a substantial economic surplus. ;
2) Most forms of intergroup conflict and oppression (eg racism, ethnocentrism, sexism, nationalism, classism, etc.) can be seen as different manifestations of the same human predisposition to form a social hierarchy based on groups, and;
3) Human social systems are subject to the counterbalanced influence of two types of "legitimizing myths": (1) myths / forces that accentuate social hierarchy (eg racism, sexism, nationalism, etc.); and, (2) the myths / forces that weaken the social hierarchy (eg human rights, multiculturalism, socialism, etc.).

While the first type of myth promotes the emergence or maintenance of social inequalities between groups, the second promotes social equality between groups.

The major contribution of TDS lies in the identification of the intrapersonal, interpersonal, intergroup, and institutional processes, which produce and maintain the social hierarchy. Nevertheless, we noted some shortcomings of the TDS.

- The TDS explains social inequalities in general, does not address their typologies (especially those relating to health)
- TDS justifies inequalities only by the diversity of assets, wealth and merits available to a certain category of society which differentiates it from others and which therefore makes it superior
- The TDS does not take into account in its postulate, the environment in which individuals live.

Turning now to the second theory, which is in the health domain, it relates to the feedback model, where it is important to respond with a systems analysis to the central question of Evans et al. (1996): "*Why are some healthy while others are not*? ". To answer this question, it is essential not to cling to the only medical dimension of public health. Indeed, although the existence or absence of care often turns out to be decisive for health, it still does not explain all the disparities observed. It therefore appears vital to seek to know how to build a real health policy, based on the understanding of the relative importance of the various determinants of health and the adequate measures allowing populations to easily meet health-related expenses. . Part of the problem therefore lies elsewhere than in the progress of medicine and the financing of care. In reality, health care is only one of the socioeconomic institutions that affect health. The way to eat, the working conditions, the pecuniary income and the perception of the equity of these incomes, the place of residence, and the education received, the social rise, etc. are also major determinants of health. These determinants are numerous and complex, and their interactions are more so.

Thus, the consequences of the same event can for example occur at different times for two people, which shows that the cause and effect links are neither immediate nor direct. From these findings, it is therefore possible to deduce differences in vulnerability to the disease. From this point of view, social inequalities are fundamental. In fact, it is generally accepted that people at the top of the social ladder live better and longer.

As Evans et al. (1996): “We cannot therefore explain the relationships between socioeconomic status and health as we often do by interpreting the poorer health of the poor as the result of insufficient material conditions - poor diet,

inadequate housing, violence, pollution, promiscuity, contagion, etc.

By focusing on poverty and being satisfied with this explanation, we actually risk preventing further investigation. This is why the recent health theory of Evans et al. (1996) proposes a grouping of the determinants of health into five major groups: socioeconomic and cultural environment, physical environment, family environment, genetic heritage and health care system. These various integrated elements interact to condition the state of health of populations. While the genetic makeup and the physical environment have a significant impact on health, they nevertheless remain rather uncontrollable from the point of view of human technique. On the contrary, the other three factors can be significantly improved through medium and long term policies. This is the case with the health care system and to a lesser extent with social and family environments. Thus, if public or collective health policies are currently dominated by health care distribution policies, health is not limited to the simple absence of disease.

From this point of view, when we consider the determinants of health of Evans et al. (1996) namely socio-economic and cultural environment, physical environment, family environment, genetic heritage and health care system, it is clear that these integrated elements interact to condition the state of health of the populations of the municipalities concerned by the research. But the feedback that links well-being and health from Evans et al (1996) is too general and does not delve into the content of each set of determinants.

5.2 New explanatory approaches (New theory complementary to the first two)

These two theories developed have made it possible to set up some complementary explanatory approaches to social inequalities in health to fill in the shortcomings observed after combining the Social Dominance Theory (TDS) of Sidanius and Pratto and that of the feedback from Evans et al. These complementary approaches are based on three postulates:

- The socioeconomic and cultural environment, the physical environment, income inequalities and the health care system influence health spending which in turn affects the health of individuals by social groups by inducing social inequalities in health;
- There is a two-way relationship between health expenditure and the socioeconomic environment on the one hand and then between health expenditure and social inequalities in health on the other;
- There is a link between the health care system and household health expenditure

When analyzing these three complementary postulates of mixed theory (TDS + Feedback), the socio-economic and cultural environment acts on the health of individuals. Populations living in an unfavorable socio-economic environment are vulnerable and are exposed to a very high risk of disease. Given the smallness of their purses, they fear the expenses that may be generated by their poor state of health. They use, as appropriate, first self-medication, then traditional therapy and religious or spiritual care. They then take the time before going to a health center, sometimes when the disease is already worsened and their state of health sufficiently deteriorated and requiring emergency care. The high cost of emergency care associated with the cost of various prehospital treatments increases patient health costs. In fact, poor households spend more of their income on recovering their health. Which further impoverishes them. As for the physical environment, it interacts with the conditions of housing, hygiene and sanitation to influence the health of households regardless of the social category to which they belong.

Also, the second postulate establishes a link between income inequalities and household health expenditure. Health expenditure takes up part of the income and therefore of the overall consumption of the household. This link can result in individuals with low incomes allocating low or moderate resources to health care. These amounts are generally not sufficient to guarantee them better care and therefore good health that allows them to remain productive. Still in line with this postulate, the health care system also has an effect on household health spending. Indeed, the health system describes the organizational and strategic means put in place by the country, by geographic areas or community entities, in order to ensure continuity and quality of health services. The structure of state financial support (health insurance, free healthcare, various subsidies and essential drugs) are factors that act directly on the care of patients and therefore on their health expenditure. This is best explained by considering the national health policy of a country. It can also be attached to the health care system, accessibility to health care in these three dimensions: physical, financial and acceptability. The development of these different parameters makes it possible to bring people closer to healthcare and facilitates their care without real financial burdens.

The aggregation of all three postulates associated with mixed theory (TDS + Feedback) led to the design of a theory called Kocou Theory Edgard Romaric AKPOVO "T-KERA (2020)". It is a coherent set of explanations, notions and ideas about social inequalities in health, which may include hypotheses, induced by the accumulation of facts from observation and experimentation on the health of individuals caught up in a specific socio-economic and demographic environment. The T-KERA 2020 model therefore establishes the link between these determinants and health expenditure to explain the construction of social inequalities in health. It has the advantage of identifying the "causes of the causes" of social inequalities in health and of providing a framework for analyzing the links between health spending and SIH in the socio-health and economic context of Benin. In addition, it combines previous existing theories on social inequalities in health. Finally, it is simple and empirically testable by econometric methods.

The figure below clearly shows the complementarity between the three theories as well as the contribution of each of them.

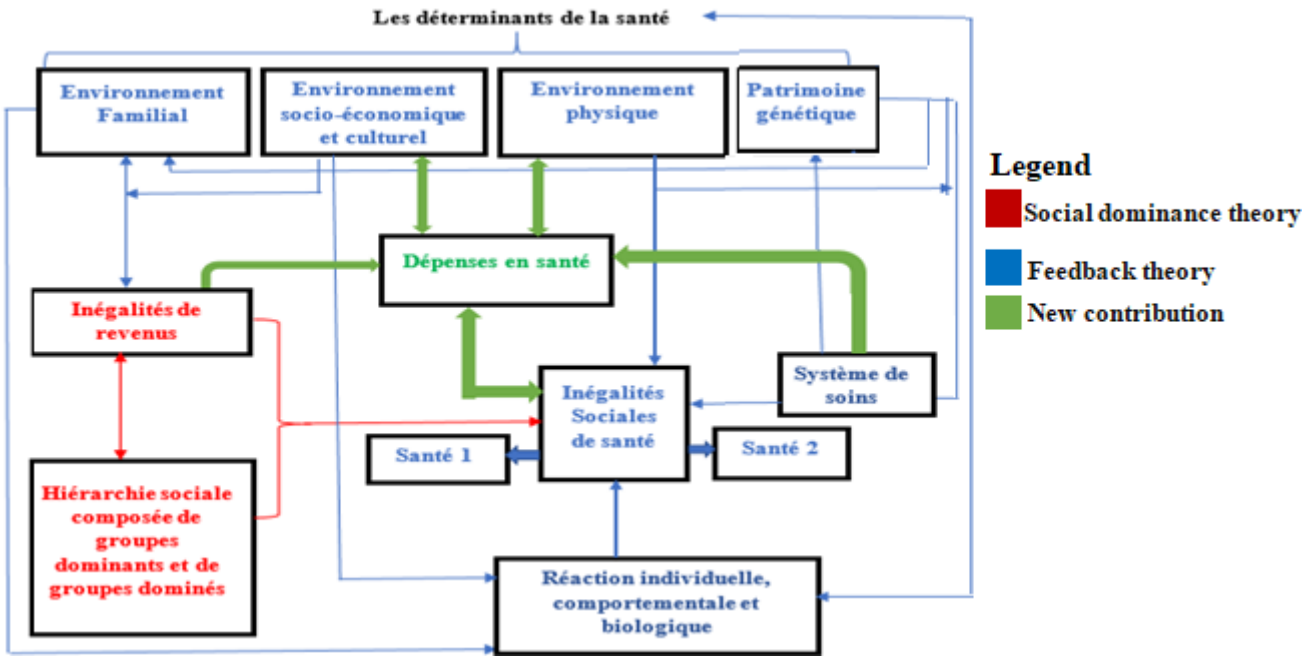

Figure 7: T-KERA model of social inequalities in health inspired by the models of (Sidanius & Pratto) and (Evans et al)
Source: Field survey results January 2020, Akpovo, Abalot, Ouendo, 2020

6. Conclusion

This research has shown that household health expenditure plays a determining role in the construction of social inequalities in health in the communes of Cotonou, Savè and Karimama in the Republic of Benin. These results further explain social inequalities in health by bridging the gap between health spending and the deterioration in household living conditions. A link has been established between health expenditure, standard of living, socio-economic conditions and household health gaps (T-KERA) to explain the social inequalities in health in the target municipalities. In other words, in the said communes, the population is divided into a hierarchical class of dominant and dominated. This gap, which is reflected in the level of income, has a direct impact on the ability of households to take care of themselves. Thus, health spending, which exerts a heavy weight on the already low income of the dominated, keeps them in poverty or worsens their situation. This worsens their living conditions and therefore maintains the observed income gap. This deterioration in living standards is compounded by the inability of poor households to access health care. This set of factors contributes to the weakening of the health of the poor in a context of advanced precariousness. Therefore, not having a strong financial capacity to obtain adequate care, a health gap is widening between the dominant and the dominated, built by health spending. This explains the social inequalities in health. The T-KERA then comes as a new theory to better explain the production of social inequalities in health in Benin. Through these postulates, it innovates by facilitating knowledge of the causes of the construction of inequalities in a context of multidimensional poverty. Also, this theory serves as levers on which action should be taken to facilitate the reduction of social inequalities in health in Benin. Finally, T-KERA is a decision support tool. It is an instrument that can serve as a basis for the development of health policies and strategies whose ultimate goals remain the reduction of the health gaps between rich and poor. It can be used in other fields such as psychology, sociology and anthropology. The dimensions that are developed make it possible to strengthen existing national policies and are likely to lead to an improvement in the well-being of the populations of towns and countryside, a pledge of sustainable development in Benin. This same model complements the level of knowledge in the field of the sociology of precariousness and the anthropology of poverty. It is intended for the scientific public and serves as a benchmark for any high-level decision-maker in the field of health. T-KERA can be transposed and very useful in other countries with a socio-economic context similar to that of Benin.

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