

## Knowledge and Management of Hypertension in a West African Setting: Abidjan, Côte d'Ivoire

Brou Kouame Aristide<sup>1</sup>, Esse Diby Clemence<sup>2</sup>, Jasmina Saric<sup>3</sup> & Abe N'doumy Noel<sup>4</sup>

### Abstract

Hypertension is one of the public health problems in Côte d'Ivoire after malaria and HIV / AIDS. Thus, in view of the growing prevalence of this disease, a study was therefore conducted in the community of Port-Bouët in Abidjan, with the general objective to understand the social representation of hypertension and to identify the means of treatment and prevention applied by the population assessed. From a quantitative and qualitative approach including a household survey (N=325), individual interviews (N=3) and group discussions (N=6), it appears that the consumption of salt and cubes Maggi was perceived as the main cause with (44.38%). Dizziness (38.52%) is the most common symptom of the disease. In addition, (68.21%); some people resort to modern medicine however; a use of traditional medicine has been reported with (30.26%). Apart from drug treatment, non-pharmaceutical therapeutic approaches appeared essential in the care of patients with hypertension. As preventative measures the measure, population seem to advocate reducing the consumption of salt and extremely fatty foods and the practice of regular physical activity. However, it seems that the implementation of this knowledge is not yet effective, hence the need to intensify awareness campaigns on hypertension and its social representation.

**Keywords:** Hypertension, Social representation, Therapeutic strategy, Abidjan, Côte d'Ivoire

### 1. Introduction

Having faced quite different public health priorities two decades ago, the health problems of high- and low-income countries have started converging in more recent times. Today, human health across the globe is challenged by an aging population, rapid urbanization and the spread of a sedentary life style combined with an unhealthy diet. As a consequence, non-communicable diseases, most notably cancer, cardiovascular disease, chronic lung disease and diabetes, have taken precedence over infectious diseases as the main global cause of mortality.

One of the main risk factors for cardiovascular disease is hypertension, increasing the risk of coronary heart disease, heart failure and stroke among others. With 600 million patients registered in 1980, the number of people affected by high blood pressure has increased over the years, reaching one billion people worldwide (WHO, 2013). This proportion is projected to increase with the aging world population and to reach 29.2% by 2025 (WHO, 2012). Hypertension caused 7 to 8 million deaths worldwide in 2011 and was responsible for about 12.8% of all disease-related deaths in the same year (Blacher et al. 2013). In addition, the disease is responsible for 51% of stroke deaths and 45% of coronary deaths (WHO, 2009). In Africa, the number of people with hypertension increased from 54.6 million in 1990 to 92.3 million in 2000, and 130.2 million in 2010. Under prevailing circumstances, this could increase to 216.8 million by 2030 (Adeloye D et al. 2014).

<sup>1</sup> PhD student in Anthropology and Sociology at Alassane Ouattara University, Ivory Coast. Associate Researcher at the Swiss Center for Scientific Research in Côte d'Ivoire

Email: [kbrouaristide@gmail.com](mailto:kbrouaristide@gmail.com) / 00225 47-78-94-00/ 01 BP 1303 Abidjan

<sup>2</sup> Assistant Professor, Research Professor at Felix Houphouët Boigny University, Côte d'Ivoire / Associate Researcher at the Swiss Center for Scientific Research in Côte d'Ivoire. Email: [esse\\_clemence@yahoo.fr](mailto:esse_clemence@yahoo.fr)

<sup>3</sup> Swiss Tropical and Public Health Institute, Basel, Switzerland and University of Basel, Basel, Switzerland  
Email : [jasmina.saric@csrs.ci](mailto:jasmina.saric@csrs.ci)

<sup>4</sup> Sociologist Health Anthropologist, Professor Holder at Alassane Ouattara University, Ivory Coast Email : [ndoumyabe@yahoo.fr](mailto:ndoumyabe@yahoo.fr)

Hypertension has progressively become a major threat to the well-being of people in sub-Saharan Africa (SSA). During the past four decades, the highest levels of BP worldwide have shifted from high-income countries (HIC) to low-and middle-income countries (LMIC) in South Asia and SSA (Zhou B et al. 2017). The WHO estimates that the prevalence of hypertension is highest in the African region, with about 46% of adults aged 25 years and older being hypertensive. This compares to 35% in the Americas and other HIC and 40% elsewhere in the world (WHO, 2015).

In Côte d'Ivoire, an increase in the prevalence of hypertension has been reported by the Abidjan Heart Institute. In fact, among the patients received in this facility, 49% of hypertensive patients in 1996 and 62% in 2004 were registered (N'guetta et al. 2007). At the national level, there is also an increase in the prevalence of hypertension, from 13.9% in 1976 to 21.7% in 2005 (Bertrand et al. 2005). At the national level, there is also an increase in the prevalence of hypertension. Indeed, from 13.9% in 1976 to 21.7% in 2005 (Bertrand et al., 2005), the prevalence reached 33.7% in 2014 (WHO, 2014).

For Abidjan alone, an estimated 21% of the population was affected by this disease as reported in 2007 (Koffi, 2007). Moreover, observations made in some first contact health facilities show that 15% of the reasons for consultations are attributed to hypertension (Koffi et al. 2001). In Port-Bouet (Abidjan) according to data from the health district for the year 2013, 1554 people with high blood pressure were registered. In 2014, it was 3695, an increase of 2141 (Health District, 2015).

In light of these different prevalences, it appears that arterial hypertension is present in the population. However, it remains unknown by the vast majority of them. Also, existing disease management structures in Côte d'Ivoire are not sufficiently equipped with equipment dedicated to the management of chronic non communicable diseases such as high blood pressure. Also, these structures are still insufficient and unequally distributed, forcing diseases to be carried out long distances in order to benefit from care. It is on the basis of this observation that this research proposes to understand the social representations of populations related to arterial hypertension as well as the means of treatment and prevention that they use to treat themselves and avoid illness. This approach consisted in determining the knowledge of the populations and in specifying the various curative and preventive practices mobilized within the framework of the treatment and the prevention of the arterial hypertension.

## **2. Methodological approach and theoretical framework**

### **2.1 Methodological approach**

#### **2.1.1 Study site**

This study was carried out in Port-Bouet one of the southern communes of Abidjan, the economic capital of Côte d'Ivoire. The commune of Port-Bouet belongs to the 10 communes making up the autonomous district of Abidjan and it is located in the south of this city. It is surrounded by the towns of Koumassi, Marcory and Treichville (north), the Atlantic Ocean (south), the city of Grand Bassam and Bingerville (east) and the community of Yopougon (west). The study was conducted specifically in urban areas, namely the neighbourhood of Sogefiha and the rural village of Abouabou.

#### **2.1.2 Sampling method**

To assess the level of knowledge of the populations relative to arterial hypertension a household survey was carried out with the head of household or his representative. The unequal probability method was chosen to determine three out of eight existing neighbourhoods in Sogefiha to conduct the survey. The following districts or areas were identified: police station 1, hospital and ocean. In addition, Abouabou was selected which is smaller and constitutes a single district only. The minimum sample size was calculated from the following formula:  $n = a^2 * p (1-p) * C / I^2$  ( $a = 95\%$  confidence level (standard value of 1.96),  $p =$  Estimated prevalence of knowledge of hypertension,  $I =$  accuracy (set at 7.5% taking account of cost and time constraints),  $C =$  correction coefficient related to the cluster effect (estimated at 1.5 %.) (WHO, 2003). On the basis of these parameters, the minimum sample size for the survey was calculated as 257 households. The minimum sample size was equally distributed across the four sectors of the study area leading to 65 household interviews in each sector. Summing 65 households by sector, the minimum sample size was estimated at about 260 households. Focus group discussions (FGD) were conducted in addition to the survey with representatives from three socio-demographic groups (this was a social category survey with women, men and a mixed group of girls and boys) as well as semi-structured interviews with a doctor, nurse, neighborhood leaders and local chiefs.

### 2.1.3 Data processing and analysis

The data collected during the quantitative survey were analyzed using Sphinx Plus<sup>2</sup> software. All questions were pre-encoded and subsequently copied into the software which allowed obtaining tables of frequency and crossing the different variables. Qualitative data were processed by the N'VIVO software by entering the survey data, coding all answers and gather identical data group similar data. Additionally, content analysis was conducted for evaluating interviews. It enabled a more reliable and objective analysis of people's knowledge of hypertension.

### 2.2 Theoretical framework

From the perspective of the theoretical perspective, the analytical trajectory of the data collected is that emanating from the theory of representation. Indeed, social representation is a specific mode of knowledge. In a given social group, the representation of an object corresponds to a set of information, opinions and beliefs relating to that object. [...]

To work on a representation is: "to observe how this set of values, of social norms and cultural models is thought and lived by individuals of our society: to study how is elaborated, structured logically and psychologically, the image of these social objects ". (Herzlich, 2005). Studying social representation is observing and analyzing the way in which values, social and cultural norms are thought and lived by the actors (Knaff, 2010). Moreover, this theory refers to the understanding of an implicit phenomenon, while seeking the how and why of the actions that are related to the fact studied.

It is in this context that Jodelet (1989), believes that "Social representations are systems of interpretation governing our relationship to the world and to others who direct and organize social behavior and communication. Social representations are cognitive phenomena that engage the social belonging of individuals through the internalization of practices and experiences, models of behavior and thought. By analyzing the thoughts of these authors, it appears that representation means a perception, a mental image whose content relates to an object, a situation, a scene of the world in which the subject lives. It is the act of rendering something by means of a figure, a symbol and a sign.

## 3. Results

### 3.1 Knowledge of hypertension

#### 3.1.1. Nosology related to hypertension

No local lay name was identified that accurately translates into arterial hypertension in either of the different local languages of the population assessed (Table 1). However, to refer to high blood pressure, 95.5% of Sogefiha and 86.2% of Abouabou respondents use the biomedical term "tension" being significantly more quoted in Sogefiha compared with Abouabou ( $p = 0.02$ ). The second name used by the populations to designate the disease, it is the French expression 'attention' used by 0.5% of respondents Sogefiha and 1.5% of those in Abouabou. In addition, 4% in Sogefiha and 12.3% in Abouabou, respondents feel they have no knowledge of a local name of the disease.

Local name of high blood pressure	Sogefiha (n=198)	Abouabou (n=65)	P
Tension	189 (95.5%)	56 (86.2%)	<b>0.02</b>
Attention	1 (0.5%)	1 (1.5%)	0.43
Do not know	8 (4%)	8 (12.3%)	<b>0.03</b>

**Table1: Local nosology related to high blood pressure**

#### 3.1.2. Etiological factors

The populations of the localities of Sogefiha and Abouabou attributed several causes to the occurrence of hypertension from the most representative to at least representative as mentioned in the table above.

Table 2: The different causes attributed to high blood pressure

Cause of high blood pressure	Sogephia (n=365)	Abouabou (n=112)	P
Sedentary lifestyle	24 (6.58%)	5 (4.46%)	0.55
Salt/Maggi cube	162 (44.38%)	35 (31.25%)	<b>0.01</b>
Eat fat	73 (20%)	24 (21.43%)	0.84
Alcohol/Tobacco	26 (7.12%)	2 (1.79%)	<b>0.03</b>
Stress/worries	57 (15.62%)	34 (30.36%)	<b>&lt;0.001</b>
Anger	23 (6.30%)	12 (10.71%)	0.17

**Table 2: causes of high blood pressure**

Respondents from both localities mentioned the same causes related to high blood pressure. However, some causes are more cited by one or other of the study areas. Among the causes listed in the questionnaire, "consume salt and Maggi cubes" was the most mentioned cause with 44.38% of the answers given to Sogefiha vs 31.25% provided to Abouabou.

Apart from salt, other causes are mentioned including the consumption of alcohol and tobacco with 7.12% Sogefiha responses and 1.79% to Abouabou. Indeed, a significant difference was observed between study localities as regards the responses relating to the consumption of salt and the Maggi cube ( $p = 0.01$ ). Similarly, there is also a significant relationship for alcohol and tobacco use ( $p = 0.03$ ).

This significant difference in the consumption of salt and the Maggi cube; alcohol and tobacco could be explained by the fact that in urban areas there is an increased consumption or introduction of this substance into food preparations and excessive alcohol consumption and tobacco by city dwellers. As a result, respondents are rightly blamed for these elements as risk factors for high blood pressure.

Moreover, we note a very significant difference in the frequency of respondents' responses to Abouabou regarding worries and stress 30.36%, compared to Sogefiha's data 15.62% with ( $p < 0.001$ ). The difference in the frequency of responses concerning worries and stress could be explained by the fact that Abouabou populations in rural areas are less exposed to stress and worried

### 3.1.3. Perception of hypertension

Symptoms of high blood pressure	Sogephia (n=296)	Abouabou (n=96)	P
Visual disturbances	19 (6.42%)	6 (6.25%)	<b>1</b>
Headaches	46 (15.54%)	15 (15.63%)	<b>1</b>
Dizziness	122 (41.22%)	29 (30.20%)	<b>0.04</b>
Palpitations	41 (13.85%)	15 (15.63%)	<b>0.79</b>
Do not know	68 (22.97%)	31 (32.29%)	<b>0.09</b>

**Table 3: Symptoms related to high blood pressure**

Respondents described what they mean by high blood pressure through a set of signs or symptoms. In total, 4 major signs were mentioned by respondents as manifestations of high blood pressure. So among these signs, vertigo is the best-known signs of the population with a percentage of 41.22% Sogefiha against 30.20% in Abouabou. There is a significant difference between the responses collected in the two study areas ( $p = 0.04$ ). Apart from vertigo other signs are known from the respondents. These include headaches, palpitations, visual disturbances. In addition, many respondents have no knowledge of the signs of recognition of high blood pressure. And these represent 22.97% of Sogefiha respondents and 32.29% of those of Abouabou. Thus, the ignorance of the symptoms of high blood pressure appears more significant among rural respondents, Abouabou unlike those in urban areas, Sogefiha.

### 3.2. Treatment of high blood pressure

### 3.2.1. Curative treatment

Therapeutic practices of populations in case of high blood pressure come in different forms. Indeed, 65.49% of Sogefiha respondents and 75.47% of Abouabou, claim to have more recourse to modern health structures for the treatment of high blood pressure and 33.1% of respondents Sogefiha versus 22.65% of Abouabou for traditional treatment. Modern care is the first choice for most respondents in both rural and urban areas. However, the large proportion of Sogefiha respondents who mentioned traditional medicine is partly related to the large presence of these practitioners in urban areas. Because the urban environment is a concentration area of any activity, it is rightly that several respondents solicit this medicine for care. Overall, there is no significant difference in the choice of therapeutic options for residential areas.

The table above presents a summary of the various medicinal plants mentioned in the study and used by the populations against high blood pressure.

Plants	Species	Parts used for care
Coffee weed	<i>Cassia occidentalis</i>	Leaves
Teak	<i>Tectona grandis</i>	Leaves
Guava	<i>Psidiumguajava</i>	Leaves
Néré	<i>Parkiabiglobosa</i>	Leaves and grains
Basil	<i>Ocimum basilicum</i>	Leaves
Soursop	<i>Annonamuricata</i>	Leaves
Avocado	<i>Persea americana</i>	Leaves and avocado core
Clove basil	<i>Ocimumgratissimum</i>	Leaves
Lemongrass	<i>Cymbopogoncitratatus</i>	Leaves
Moringa plant	<i>Moringaoleifera</i>	Leaves
Mango	<i>Mangiferaindica</i>	The Scots
Coconut	<i>Cocos nucifera</i>	The roots
Bitter kola	<i>Garcinia Kola</i>	The grains
Corn	<i>Zeamays</i>	The hair
Lemon	<i>Citrus australasica</i>	Leaves
Chinese bamboo	Bambu seae	Leaves

**Table 4: List of plants cited by respondents**

The observation of the painting reveals a large variety of plants. The use of this herbal medicine according to their users, is related to the fact that these plants have hypertensive properties. Thus, thanks to a mixture of leaves, roots, and bark of these medicinal plants, a decoction is obtained. These preparations are administered only in the form of herbal tea or beverage. However, leaves are the most used parts during drug preparations. The reasons given for the use of this herbal medicine can be summarized as the high cost of the official health services, the knowledge of appropriate drugs and their availability. These drugs come mainly from two sources, the traditional therapists and the patients themselves, their parents or their knowledge. The combination of modern medicine and traditional medicine, however, is mentioned to "enhance the effectiveness of modern medicines".

### 3.2.2 Non-drug based treatment of hypertension

Essential component of the care of patients, non-drug treatment is based on the therapeutic protocol to which patients are subjected. Thus, by analyzing the data in the table below, it appears that several elements intervene in this type of treatment according to the respondents. And among these data, the most representative are the grains of néré (parkiabiglobosa) commonly called *soumara* (factory based fermented néré sheaths), Malinké populations as well as fruits and vegetables. Indeed, 30.94% of the Sogefiha and 46.67% Abouabou respondents argue that néré grains are essential in the non-pharmacological treatment of high blood pressure because they allow to lower the blood pressure ( $p = 0.01$ ). This difference in proportions is partly related to the area of residence of the respondents because in rural areas, the acquisition of *soumara* does not require any financial resources, unlike in urban areas, where the applicant has to pay money to obtain it. Apart from néré grains, 20.75% respondents from Sogefiha and Abouabou 20% believe that the consumption of leaves and vegetables helps to regulate the tension.

Another non-drug treatment is fruit consumption. For 20.75% of Sogefiha and 17.33% Abouabou respondents, fruit consumption is an important contribution to stabilizing blood pressure. In addition to these products, 11.32% of Sogefiha respondents and 5.33% of Abouabou maintain that garlic and onion have hypertensive properties. For this purpose, their consumption makes it possible to regulate the voltage figures. 10.2% of Sogefiha respondents and 4% of Abouabou, believe that consumption of gnanan (*solanum torvum*), also helps to cure this disease. Apart from those surveyed who are aware of these non-drug treatments, 6.04% of Sogefiha and 6.67% of Abouabou feel they have no knowledge of this practice.

### 3.3 Preventive treatment

Adopting a healthy diet and healthy lifestyle is the best way for people to prevent high blood pressure. This attitude is related to their etiological perception of the disease.

Thus, the main preventive measure is to reduce salt consumption with 33.24% responses to Abouabou against 36.63% in Sogefiha. This measure is supported by that concerning the practice of physical activity with 21.56% in Sogefiha. In Abouabou, the preventive measure that comes in the second position is to avoid eating too much fat with 19.81% of the answers. In third place as a preventive measure, we have in Sogefiha to avoid consuming too much fat with 20.17% answers and Abouabou the practice of physical activity with 14.85% of the answers.

Apart from these measures which appear as essential follow other measures which are considered secondary. These include limiting alcohol consumption, eating fruit, avoiding stress, worries and overweight or obesity. Notwithstanding this great ease of respondents to identify preventive measures, note that 2.27% of respondents in Sogefiha and 5.94% of Abouabou, say ignore the preventive measures relating to hypertension.

## 4. Discussion

The general purpose of this paper was to analyze social perceptions and therapeutic routes related to high blood pressure. Indeed, the increase in the prevalence of arterial hypertension in Côte d'Ivoire makes this pathology a public health problem after malaria and AIDS. However, this disease is part of the Non Communicable Diseases (NCDs), which is not well known in the population. Faced with this situation, this study was initiated in a global framework of research on Non communicable Diseases (NCDs) in order to better capture the knowledge and practices of populations related to this disease. Five steps mark the discussion of the results of this research.

### 4.1 A lack of appointment of the disease

The data collected showed, as elsewhere an absence of local nosologies related to high blood pressure (Salem et al., 1993). The term commonly found in populations is "the tension" which corresponds only to a biomedical designation. The elements collected on the representations of hypertension have something paradoxical. We see a great poverty of the nosology described when one is accustomed to the richness of the names made up around the common diseases. Indeed, in the past, arterial hypertension was present only in the West and it is only in recent decades that the disease makes the news in Africa (Kaoté, 1978).

Thus, the absence or non-existence of nosology in these populations is linked to the character accorded to high blood pressure, in this case that of so-called "emerging" disease. This characterization means that this disease does not exist in the sphere of the studied populations. As a result, it is just that there are no social meanings attributed to this disease in the populations studied. This characterization means that this disease does not exist in the sphere of the studied populations. As a result, it is just that there are no social meanings attributed to this disease in the populations studied.

### 4.2 Mode of interpretation and manifestation of the disease

Numerous causes have been cited by the households to justify the frequency and the distribution of this disease and it is remarkable that the results of the two media are not antinomic, on the contrary they agree. Many causes have been cited by households to justify the frequency and distribution of this disease and it is remarkable that the results of the two media are not contradictory. The consumption of salt and Maggi cubes appeared to be the major indicator of the occurrence of high blood pressure. The designation of the salt and cube Maggi as a major cause of high blood pressure is explained by the consumption or introduction of more and more frequency of this substance in food preparations.

This is not without consequence on the health of the consumers or the populations because the sodium-dietary intake contributes to the elevation of the blood pressure and therefore to the prevalence of high blood pressure. This assertion is confirmed by other studies such as those carried out recently by Demaio and al (2013) in Mongolia and Cook et al (2007) and also the one carried out for several years such as that of Kaoté (1978).

Indeed, with the phenomenon of globalization and urbanization, the modification of diets does not spare any community today. Whether living in rural or urban areas, all adopt this new way of life, which consists in adopting a diet that is richer in salt (Pouleter and al., 1985). In addition, stress for Sogefiha populations and concerns for Abouabou are the second trigger for high blood pressure. The American studies of (Heurtin-Robert, 1993 and Wilson and al., 2002) or Swedish studies of (Kjellgren, and al., 1997) placed "stress" as the leading cause of hypertension. Indeed, there is no fundamental difference between the two expressions "stress and worry". The use of one or the other would depend on the environment in which one finds oneself. Sogefiha populations living in urban areas feel they face enormous difficulties. Because the city is described as an anonymous and solitary place, made up of conflicts, aggressiveness and selfishness (Salem and al.1993).

Stress refers to difficulties such as workloads, constraints, cadences, and responsibilities; difficulties at work or within the family; difficult living conditions, financial, biographical accidents (death or illness of a relative, disability, rupture or divorce) that create an emotional shock.

On the other hand, those of Abouabou being rural, they feel less exposed to the constraints imposed by the life from which the use of the expression "worries". In one way or another, social life or emotions overwhelm the individual who can no longer cope with excesses, excess, and accumulation. Arterial hypertension is then the metaphor of social pressure, or the metaphor of anxiety and emotions (Sarradon-Eck A, 2008). In both localities vertigo, palpitations, visual disturbances represent the central symptoms mentioned by the populations with the major symptoms of vertigo. "Vertigo" refers to loss of control of the body. The notion of loss of control of the body refers to the fact that generally people with high blood pressure are victims of accidents and can sometimes collapse because they can no longer take control of their body. This loss of control of the body causes loss of balance which is sometimes fatal for the victims, thus causing a loss of the driving force. The symptoms cited by the populations of the two localities thus correspond to the clinical signs of hypertension. The same symptomatic representations of the hypertension were found in the study of Vaillant-Roussel (2009). The management of high blood pressure in the populations of Sogefiha and Abouabou is done in two ways.

### **4.3 The use of modern medicine as a preferred therapeutic practice**

The study shows that the management of arterial hypertension in the Sogefiha and Abouabou populations is done in two ways. At first sight, the use of modern medicine is the preferred option. The priority use of the modern medical institution is linked to several factors. Indeed, with the urbanization of the city of Abidjan and the suburbs and the availability of means of transport, access to health facilities becomes more or less accessible to the populations. Accordingly, the population believes that only modern medicine has the necessary competence to provide appropriate care for the sick. This opinion is the same as that shared by the populations of Mongolia in the study by Demaio and al (2013) in which the populations consider themselves oriented towards modern structures.

Moreover, the notion of arterial hypertension in traditional medicine seems relatively recent and is generally based on a pre-established conventional diagnosis (Anna, 2002). With such a difficulty to make a diagnosis, the surge of the patients towards the modern structures of care is justified. However, various reasons have been put forward to justify the use of traditional medicine. Indeed, traditional medicine offers a quick solution to the heavy constraints imposed by the treatment of biomedicine. In addition, the lack of financial resources and the absence of health insurance support the use of traditional medicine. Because the management of high blood pressure is part of the consultations of specialties, therefore in specialized structures.

However, the prices offered in these structures are very often beyond the financial possibilities of the patients. For example, the cost of the ECG is 8000 Frs, the cost of consultations 8000 Frs and the heartography 25 000Frs at the Institute of Cardiology of Abidjan (Essé and al., 2013). This representativeness of medicinal plants in the treatment of hypertension has also been observed in ethno-medicinal surveys (Fézan, H and al., 2008; Lans, 2006). Indeed, during this investigation several plants were identified by the author as having anti-hypertensive properties.

And among these plants, species such as *psidiumguajava*, *cassia occidentalis*, *ocimumgratissimum*, *persea americana*, mentioned by the author as effective in the treatment of arterial hypertension, are the same species included among those provided by our respondents as Used to treat the disease.

In addition, in recent years, more and more research has been carried out on medicinal plants for antihypertensive medicines used by traditional healers that have shown a certain efficacy. Among these plants are *Spondiasmombin*, *Ziziphusmauritiana*, *Catharanthusroseus cassia occidentalis*, etc. (Ross I, 1999, Iserin, Masson and Kedellini, 2001, Guindo, 2005, Ba, 2005). Phytotherapy linked to first-line treatment of arterial hypertension is rare in Port-Bouet populations. It is used only by people who previously practiced this mode of treatment in their home environment, in this case their village. It only intervenes in reality in the event of failure of modern medicine and seems to concern only the cases where the origin of the disease was attributed to metaphysical forces such as geniuses, sorcery. Traditional medicine thus intervenes mainly as a cultural element that connects the citizen with ancestral medicinal practices specific to his ethnic group. Its psychological impact can not be neglected (Helitser-Allen and al, 1992).

In addition to drug treatment, populations also reported non-drug treatments. This position of the populations is shared by Appel L.J, and al (1997) who estimates that in the modern diet, the share of plants is too low, whereas this should represent 70 to 80% of our dietary intake. Hence the author's recommendation to have a fruit as dessert and to partially compose meals from vegetables (or cereals or starches). For the author, we must stop considering vegetables as a simple accompaniment, but rather as the main component of our meals.

#### **4.4 Traditional products as the main non-drug treatment**

The study noted the use of some traditional products as part of non-drug treatments. Among these products, we can mention the soumara (factory based fermented *néré* sheaths), gnanngnan (small bitter eggplant). The use of soumara in the management or prevention of arterial hypertension was also mentioned in the Lafay and al (2014) study. For these authors, tradition and modernity are not necessarily incompatible on the contrary. And it is for this reason that these authors emphasize that for a better valorization of soumara, an industry of cubic broths which uses a traditional condiment (soumara) in a modern form has been set up in Mali.

These provisions testify to the importance of this traditional condiment in the fight against this disease. This is why sensitization, a fight against the fantasies that surround the consumption of salt (strength, life, power), a valorization of local alternative solutions, often richer from the nutritional point of view such as shrimp powder, soumara ( made from fermented *néré* sheaths), djeke-wara (made from dried fish), pepper, garlic and onion, gnanngnan etc. is necessary.

In terms of preventive practice, various measures are recommended by the populations. Indeed, the reduction of salt consumption as an essential measure in the prevention of high blood pressure has been emphasized in various writings. These are, in fact, studies by Drabo Y. and al (1992); of Kusuma and al (2009); of Bis E. and al (2009); from He FJ. and al. (2004); of Aviv A. and al. (2004); of Lafay V. and al. (2006). Reduction of salt consumed resulted in the same reduction in blood pressure (SAP: 8.3 mm Hg, PAD: 2.9 mm Hg) in both hypertensive and non-hypertensive subjects (Whitworth, 2003). In view of these results, the reduction of sodium consumed can only be strongly recommended in hypertensive individuals in particular and to any individual in general in the prevention of hypertension (Mancia and al., 2013). Concerning the practice of physical activity, the study carried out by Kassis (2012) joins our own and attests that the sedentary patient has a risk of developing an arterial hypertension.

#### **4.5 Salt reduction and the practice of capital sport in the prevention of hypertension**

Moreover, the regular practice of a physical activity participates in the reduction of the figures of the blood pressure. According to the WHO, inactivity or insufficient physical activity is a risk factor for high blood pressure. Thus, people who are too sedentary have a mortality risk of 20-30% higher than those who practice at least 30 minutes of moderate exercise on most days of the week (WHO, 2010). In fact, the practice of physical activity allows for a new lifestyle and the fight against physical inactivity. Hence the recommendation for dynamic exercises such as cycling, swimming, jogging. Although the reduction of alcohol consumption is not a major concern for our respondents in the prevention of hypertension with less than 10% of the proportions, it remains in other studies. Indeed, a combined analysis of several studies conducted by (Foucarde and al., 2007, Wildman and al., 2005 and Kassis, 2012) revealed that excessive and abusive alcohol consumption contributes significantly to the onset of Hypertension.



## 5. Conclusion

The progression of high blood pressure in Côte d'Ivoire in recent years, as well as its adverse effect on health, make it a real public health problem in both urban and rural areas. It is a major cause of cardiovascular morbidity and mortality and has multiple social and economic consequences. Thus, initiating a study on the level of knowledge of populations related to this disease was timely. This study, the general objective of which was to understand social representations and to identify the means of treatment and prevention used by the population in the face of high blood pressure, allowed us to situate ourselves on the level of knowledge of the populations to high blood pressure. Although the results indicate some knowledge of the populations, however, discrepancies are noted related to the symptoms. In addition, the health and preventive behaviours of populations are subject to a combination of sociocultural, economic, environmental and geographic factors. Given these difficulties, populations give operational value to non-drug treatment, the role of which may be thought to be essential in a context of financial constraints.

Thus, to better contribute to the reduction of the prevalence of high blood pressure and to anticipate the advent of complications, it is necessary to act early upstream, that is to say at the base through campaigns to sensitize the population. However, this study should be considered in the context of its limitations. In this perspective, similar studies in the same context are required in other districts to confirm the trends observed in the sites studied.

## References

- Adeloye D, Basquill C (2014). Estimating the prevalence and awareness rates of hypertension in Africa: A systematic analysis. Schnabel RB (ed). PLoS One; 9(8): e104300.
- Anna P. (2002). High blood pressure in Guinea: prevalence in rural areas (Töbölön and Köpèrè-Doifili); place of phytotherapy in the care. PhD Thesis, University of Guinea
- Appel L.J., Moore T.J., Obarzanek E. et al. (1997). For the DASH Collaborative Research Group: A clinical trial of the effects of dietary patterns on blood pressure. *N Engl J Med.* 336(16): p. 1117-1124.
- Aviv A., Hollenberg N.K., Weder A.B. (2004). Soduimglomerulopathy: tubuloglomerular feedback and renal injury in African Americans. *Kidney Int*; 65: 3618
- Ba, S.H. (2005). Study of the phytochemistry and biological activities of *Zizyphus mauritiana* Lam (Rhamnaceae) used in the traditional treatment of diabetes and arterial hypertension in Mauritania. Bamako, Pharmacy Thesis FMPOS, 120.
- Blacher, J. HalimI, J-M. Hanon, O. (2013). MANAGEMENT OF THE ARTERIAL HYPERTENSION OF THE ADULT. French Society of Hypertension Arterial. January
- Bertrand E., Serie F., Kone I. et al. (2005). Survey of risk factors for non communicable diseases in Côte d'Ivoire. Lagoons health region.
- Bis E., Pimenta K.K., Gaddam S. (2009). Effect of dietary sodium reduction on blood pressure in subjects with resistant hypertension: results from a randomized trial. *Hypertension*, vol 54, n°3: 474-481.
- Demaio A.R., Otgontuya D., De Courten M. et al. (2013). Hypertension and hypertension-related disease in Mongolia; findings of a national knowledge, attitudes and practices study. *BMC Public Health*, 13:194.
- Drabo Y.J., Dembele A., Ouandaogo B.J. et al. (1992). Of the treatment of arterial hypertension at the Fada N'gourma Regional Hospital Center about 110 cases.
- Dzudie A., Brian R, Dike O., Aletta E., et al. (2017). Roadmap to achieve 25% hypertension control in Africa by 2025: PASCAR Roadmap on Hypertension. *Cardiovascular journal of Africa*. Volume 28, No 4, July/August
- Esse, C., Brou, K.A., Silue, K. et al. (2013). Urban pollution and arterial hypertension among the populations of Port-Bouet (Abidjan, Ivory Coast). International Conference on Ecohealth.
- Fezan Tra-bi H., Irié Guy M., Kohue N'gaman C.C. et al. (2008). Studies of some therapeutic plants used in the treatment of arterial hypertension and diabetes: two emerging diseases in Côte d'Ivoire. *Science & Nature* Vol. 5 No.1: 39-48.
- Fourcade L., Paule P., Mafart B. (2007). Hypertension in Sub-Saharan Africa: news and perspectives. *Med Trop*; 67: 559-567
- Guindo, I. (2005). Study of the traditional treatment of arterial hypertension in Mali. Bamako: FMPOS pharmacy thesis, 126.
- He F.J., Macgregor G.A. (2004). Effect of longer-term modest salt reduction on blood pressure. The Cochrane Database of Systemic Reviews. (3): CD004937.

- Helitser-Allen D.L., Kendall C., Wirima J. (1992). The role of ethnographic research in malaria control: an example from Malawi. *Res. Sociology Health Care*; **10**: 269-286.
- Herzlich C. (2005). Health and illness, analysis of a social representation. Paris, School of Higher Studies in Social Sciences (EHESS). 210p.
- Iserin, P., Masson, M., Kedellini, J.P. (2001). Encyclopedia of medicinal plants, Identifications, Preparations, Care. Paris: Edition Larousse / VUEF, 335.
- Jodelet D. (1989). Follies and social representations. Paris, University Presses of France, 398 p.
- Kassis M C. (2012). Hypertension resistant: Management, case study. PhD thesis in medicine. University of Brest Western Brittany, 81p.
- KOFFI A. (2007). Management of adult patients with high blood pressure at the Abidjan Heart Institute. Abidjan (Côte d'Ivoire): ICA Report; 6pp.
- Knaff C. (2010). Ways of living, ways to heal ethnological study of social representations of tuberculosis among Roma Caramidari: Diploma of health executive & master 1 research in education and training. France, Paris-West Nanterre International University / Defense Department of Education Sciences. 107p.
- KOFFI N.M., SALLY S.J., KOUAME P. et al. (2001). Facies of arterial hypertension in a professional environment in Abidjan. *Med. Afr.* 6:48.
- Kusuma Y.S., Gupta S.K., Pandav C.S. (2009). Knowledge and perceptions of hypertension among neo and migrant people living in Delhi, India. *CVD previous check*, 4 (2): 119-129.
- Lafay V., Fourcade L., Bertrand E. (2014). Sociocultural and medical management of hypertension in sub-Saharan Africa. *Médecine et Santé Tropicales* 2014 ; 24 : 283-288
- Lafay V., Dirra M., Coulibaly S. et al. (2006). Establishment of the Hypertension Network of Mali (RHYTM). *Med Trop*; 66: 437-42.
- Mancia G., Fagard R., Narkiewicz K. et al. (2013) ESH/ESC guidelines for the management of arterial hypertension: the Task Force for the Management of Arterial Hypertension of the European Society of Hypertension (ESH) and of the European Society of Cardiology (ESC). *Eur. Heart J.* 2013;**34**(28):2159-219.
- N'guetta R., Adoh A., Ekou A. et al. (2007). Epidemiological and clinical study of arterial hypertension in cardiology consultation in Abidjan. *Afr Biomed*; 9: 57-61.
- Whitworth J.A., World Health Organization Isohwg. (2003). World Health Organization (WHO)/International Society of Hypertension (ISH) statement on management of hypertension. *J. Hypertens.* 2003; **21**(11):1983-92.
- Wildman R.P., Gu D., Muntner P. et al. (2005). Alcohol intake and hypertension subtypes in Chinese men. *J Hypertens*; **23**: 737-743.
- WHO (2015). A global brief on hypertension Available from :[http://www.who.int/cardiovascular\\_diseases/publications/global\\_brief\\_hypertension/en/](http://www.who.int/cardiovascular_diseases/publications/global_brief_hypertension/en/)
- WHO (2014). Country profiles for non communicable diseases (NCDs). Ivory Coast. Available at: [http://www.who.int/nmh/countries/civ\\_en.pdf?ua=1](http://www.who.int/nmh/countries/civ_en.pdf?ua=1)
- World Health Organization. (2012). Global health risks: mortality and burden of disease attributable to selected major risks. Repéré à [http://www.who.int/healthinfo/global\\_burden\\_disease/GlobalHealthRisks\\_report\\_full.pdf](http://www.who.int/healthinfo/global_burden_disease/GlobalHealthRisks_report_full.pdf).
- WHO (2009). Global health risks: mortality and burden of disease attributable to selected major risks, World Health Organization, Genève.
- WHO (2003). Innovative care for chronic conditions: building blocks. World Health Report. 1999.
- Zhou B., Bentham J., Di Cesare M., et al (2017). Worldwide trends in blood pressure from 1975 to 2015: a pooled analysis of 1479 population-based measurement studies with 19.1 million participants. *Lancet* 2017; 389(10064): 37–55.